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ENVIRONMENTAL STATEMENT FOR THE GEO THERMAL LEASING PROGRAM

Volume III of IV

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FINAL

ENVIRONMENTAL STATEMENT

FOR THE

GEOTHERMAL LEASING PROGRAM

Volume III of IV

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Prepared in Compliance With

Section 102(2)(C) of the National Environmental
Policy Act of 1969

Prepared by

United States Department of the Interior

1973

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SUMMARY

Final Environmental Statement

Department of the Interior, Office of the Secretary

1. Administrative type of action

2. Brief description of action:

The Secretary of the Interior is charged with the implementation of the Geothermal Steam Act of 1970 (30 USC 1001-1025(1970)) which provides for the development of federally owned geothermal resources. Section 3 of the Act defines the public lands potentially available for geothermal leasing. These include principally: (1) public, withdrawn, and acquired lands administered by the Secretary of the Interior (approximately 451 million acres in 25 States); (2) national forests and other lands administered by the Forest Service, Department of Agriculture (approximately 187 million acres in 45 States and Puerto Rico); and (3) lands containing a reservation to the United States of the geothermal resources. These lands total 638 million acres. The most promising geothermal resource areas appear to be located predominantly in the 11 western States and Alaska.

Included in this proposed action are: (1) the promulgation of leasing and operating regulations pursuant to which the program would be administered; and (2) the leasing of federally owned geothermal resources for development in three specific areas: (a) Clear Lake-Geysers; (b) Mono Lake-Long Valley; and (c) Imperial Valley, all in California.

3. Summary of environmental impact and adverse environmental effects

Lands under consideration for geothermal leasing presently are subject to use for grazing, forestry, mining and other mineral production, fish and wildlife habitat, outdoor recreation, and watersheds.

Development of geothermal resources entails construction of access roads and well sites, drilling and testing of wells, conveyance of steam over short distances to electric power plants and by-product processing plants, construction and operation of electric power plants, by-products facilities, electrical transmission lines, and facilities for disposing of waste liquids.

Locally, land would be preempted or restricted from uses such as wildlife habitat, recreational use, grazing, etc. Terrain would be modified through construction of roads, wells, pipelines, and industrial facilities. Noise and noxious gaseous emissions could pose problems during testing and production. Possible adverse effects include land subsidence due to production of fluids and increased seismicity due to production and reinjection of fluid wastes to producing zones.

INTRODUCTORY NOTES, VOLUME III

The Draft Environmental Statement for the Geothermal Leasing Program was released by the Department of the Interior on October 6, 1971. Notice of availability of the Draft Statement was published in the Federal Register, October 6, 1971. The notice also announced that public hearings were to be held in Reno, Nevada; Sacramento, California; and Portland, Oregon. The published notice announced that written comments would be received on the Draft Statement for a period of 45 days after the publication of the notice.

On May 3, 1972, supplements to the Draft Statement were issued which revised Chapter IV, Section C, Alternatives to the Proposed Action, and added Appendix G, Energy Alternatives, and Appendix H, Proposed Unit Plan Regulations. Notice of availability of the supplements was published in the Federal Register, May 3, 1972. The comment period on the original draft impact statement, the supplemental draft, and all the geothermal leasing, operating and unit regulations was extended to June 19, 1972.

Proposed leasing and operating regulations to implement the Geothermal Steam Act, Public Law 91-581, December 24, 1970, were published in the Federal Register on July 23, 1971; revised and published in the Federal Register on November 29, 1972; revised and published in the Federal Register on July 23, 1973; and corrected in the Federal Register on August 8, 1973. Proposed unit plan regulations were published in the Federal Register on May 3, 1972; revised and published in the Federal Register on November 29, 1972; published in the Federal Register on July 23, 1973.

Public hearings were held in Reno, Nevada on November 9, 1971; Sacramento, California, on November 11, 1971; and Portland, Oregon, on November 12, 1971.

Reproductions of the written comments received in response to the Draft Statement and the proposed regulations are included in Volume IV, Appendix I, of this Final Impact Statement. Reproductions of the written comments received in response to the proposed regulation revisions issued in 1972 and 1973 are included in this Volume as Appendix A-B and Appendix C-D of this Final Impact Statement.

Written comments and hearings material were systematically indexed by the Department of the Interior, and the indexed material was made available to the specialists involved in the revision of the proposed regulations and in the preparation of the Final Impact Statement. These materials are available for public inspection in the Office of the Geothermal Coordinator, U.S. Department of the Interior, Washington, D.C., 20240.

VOLUME III

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- Appendix A-B Copies of Comments Received Relative to July 23, 1973, Proposed Regulations
- Appendix C November 29, 1972. Proposed Regulations for Geothermal Resources Leasing on Public, Acquired and Withdrawn Lands and Summary of Comments Received and Departmental Responses
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MONDAY, JULY 23, 1973

WASHINGTON, D.C.

Volume 33 Number 145



APPENDIX A

July 23, 1973, Proposed Regulations for Leasing
on Public, Acquired and Withdrawn Lands; Revision
of Proposed Rule (including corrections of
August 8, 1973)

DEPARTMENT OF
THE INTERIOR
Bureau of Land Management
and
Geological Survey

GEOHERMAL RESOURCES

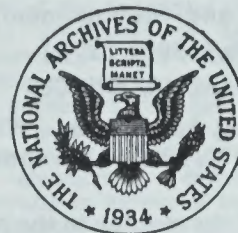
Leasing on Public, Acquired and
Withdrawn Lands: Revision of
Proposed Rule

MONDAY, JULY 23, 1973

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Volume 38..■ Number 140

PART II



DEPARTMENT OF THE INTERIOR

**Bureau of Land Management
and
Geological Survey**

■

GEOHERMAL RESOURCES

**Leasing on Public, Acquired and
Withdrawn Lands; Revision of
Proposed Rule**

DEPARTMENT OF THE INTERIOR
Bureau of Land Management
[43 CFR Parts 3000, 3200]
GEOHERMAL RESOURCES

**Leasing on Public, Acquired and With-
 drawn Lands; Revision of Proposed
 Rule**

The purpose of the revision in the proposed rule making for implementing the Geothermal Steam Act of December 24, 1970 (30 U.S.C. 1001-1025), is to provide the public with the revisions to the leasing regulations planned as a result of the public hearings and comments received on the Draft Environmental Statement and previously published proposed rules (36 FR 13722 and 37 FR 25282). The Act provides for the leasing of public lands for the purpose of geothermal resource exploration, development and production. The changes in these regulations, since the last publication on November 29, 1972, are primarily administrative and procedural in nature and the environmental impact of these regulations is not believed to be significantly different from the impact of the regulations previously published.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rule making process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, DC 20240, on or before August 22, 1973.

A Final Environmental Statement will be issued in accordance with the provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)) prior to promulgation of any leasing regulations.

1. Section 3000.0-5 of Subpart 3000, Chapter II, Title 43 of the Code of Federal Regulations is revised to read as follows:

§ 3000.0-5 Definitions.

As used in this subchapter:

(a) "Leasable minerals" means oil and gas. (1) Gas means any fluid, either combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions. (2) Oil or crude oil means any liquid hydrocarbon substance which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas, without resort to manufacturing process.

(b) "Other leasable minerals" means (1) Coal, chlorides, sulphates, carbonates, borates, silicates, or nitrates of potassium and sodium; sulphur in the States of Louisiana and New Mexico; phosphate; and native asphalt, solid and semisolid bitumen and bituminous rock (including oil impregnated rock or sands from which oil is recoverable only by special

treatment after the deposit is mined or quarried). (2) Solid (hardrock) minerals; minerals in acquired lands which would be subject to location under the U.S. mining laws if located in the public domain lands.

(c) "Secretary" means the Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(d) "Director" means the Director of the Bureau of Land Management or any person duly authorized to exercise the powers vested in that officer.

(e) "State Director" means the Director of a Bureau of Land Management State office.

(f) "Authorized officer" means any person authorized by law or by lawful delegation of authority in the Bureau of Land Management to perform the duties described.

(g) "Proper BLM office" means the Bureau of Land Management office having jurisdiction over the leased lands or lands subject to lease.

(h) "Commercial quantities" means quantities sufficient to provide a return after all variable costs of production have been met.

(i) "Public domain lands" means original public domain lands which have never left Federal ownership; also, lands in Federal ownership which were obtained by the Government in exchange for public lands or for timber on such lands; also original public domain lands which have reverted to Federal ownership through operation of the public land laws.

(j) "Acquired lands" means lands which the United States obtains by deed through purchase or gift, or through condemnation proceedings. They are distinguished from public domain lands in that acquired lands may or may not have been originally owned by the Government. If originally owned by the Government such lands have been disposed of (patented) under the public land laws and thereafter reacquired by the United States.

(k) "Other lands" (1) "Withdrawn lands." Lands which have been withdrawn and dedicated to public purposes. (2) "Reserved lands." Lands which have been withdrawn from disposal and dedicated to a specific public purpose. (3) "Segregated lands." Lands included in a withdrawal, or in an application or entry or in a proper classification which segregates them from operation of the public land laws.

2. Section 3000.4 of Subpart 3000, Chapter II, Title 43 of the Code of Federal Regulations is revised to read as follows:

§ 3000.4 Appeals.

Any party to a case who is adversely affected by any official action or decision of an officer of the Bureau of Land Management or of an Administrative Law Judge, except a decision which has been approved by the Secretary, shall have a right of appeal to the Board of Land Appeals in the Office of Hearings and

Appeals, Office of the Secretary. All appeals shall be governed by the rules of practice in Subpart E of Part 4 of this title. Nothing in this group shall be construed to prevent any interested party from seeking judicial review as authorized by law.

3. A new Group 3200 is added to Chapter II, Title 43 of the Code of Federal Regulations to read as follows:

**Group 3200—Geothermal Resources
 Leasing**

**PART 3200—GEOHERMAL
 RESOURCES LEASING; GENERAL**

**Subpart 3200—Geothermal Resources Leasing;
 General**

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3200.0-5	Definitions.
3200.0-6	Preleasing procedures.
3200.0-7	Cross reference.
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3201.1-4	Federal Power Commission.
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3202.2-2	Guardian or trustee.
3202.2-3	Attorney-in-fact.
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3203.1-2	Primary term.
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3203.1-4	Extensions.
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Subpart 3200—Geothermal Resources Leasing; General

§ 3200.0-3 Authority.

These regulations are issued pursuant to the Geothermal Steam Act of 1970 (84 Stat. 1566; 30 U.S.C. 1001-1025) and rights to develop and utilize geothermal resources in land subject to these regulations may be acquired only in accordance with these regulations.

§ 3200.0-5 Definitions.

As used in Group 3200, the term:

(a) "The Act" means the Geothermal Steam Act of 1970.

(b) "Geothermal lease" means a lease issued under authority of the Act; and unless the context indicates otherwise, "lease" means a "geothermal lease".

(c) "Geothermal resources" means geothermal steam and associated geothermal resources which include: (1) All products of geothermal processes, embracing indigenous steam, hot water and hot brines; (2) steam and other gases,

hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated energy found in geothermal formations; and (4) any byproducts derived from them.

(d) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium) which are found in solution or in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(e) "Sole party in interest" means a party who is and will be vested with all legal and equitable rights under the lease. No one is, or shall be deemed to be, a sole party in interest with respect to a lease in which any other party has any interest in the lease.

(f) "Interest in the lease" means any interest whatever in a geothermal lease, including, but not limited to: A record title interest; a working interest; an operating right; an overriding royalty interest; a claim to any prospective or future advantage or benefit from a lease; a participation in any increment, issue, or profit which may be derived, or accrue in any manner, from the lease based upon, or pursuant to, any agreement or understanding in existence at the time when the offer is filed; and an agreement pertaining to any of the foregoing.

(g) "Supervisor" means a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

(h) "Primary term" means the first 10 years in the life of the lease, exclusive of any period of suspension of operations or production, or both.

(i) "Area of operation" means that area of the leased lands which is required for exploration, development and producing operations, and which is delineated on a map or plat which is made a part of the approved plan of operations. It encompasses the area generally needed for wells, flow lines, separators, surge tanks, drill pads, mud pits, workshops, and other such facilities used for on-project geothermal resources field exploration, development and production operations.

(j) "Geothermal resource province" means an area in which higher than normal temperatures are likely to occur with depth and there is a reasonable possibility of finding reservoir rocks that will yield steam or heated fluids to wells. The classification of such a province is based on geologic inference and a deter-

mination that the area possesses one or more of the following characteristics:

(1) Volcanism of late Tertiary or Quaternary age—especially caldera structures, cones, and volcanic vents; (2) geysers, fumaroles, mud volcanoes, or thermal springs at least 40° F. higher than average ambient temperature; and (3) subsurface geothermal gradients generally in excess of two times normal, as reflected in deep water wells, oil well tests, and other test holes.

(k) "Known geothermal resource area" or "KGRA" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose.

(l) In determining whether the geology of an area is of such a nature that the area should be designated a KGRA the Director, Geological Survey, acting for the Secretary, shall use such geologic and technical evidence as he shall deem appropriate, including the following:

(i) The existence of siliceous sinter and natural geysers;

(ii) The temperatures of fumaroles, thermal springs, and mud volcanoes;

(iii) The SiO₂ content of spring water;

(iv) The Na/K ratio in spring waters of hot-water systems;

(v) The existence of volcanoes and calderas of late Tertiary or Quaternary age;

(vi) Conductive heat flows and geothermal gradient;

(vii) The porosity and the permeability of a potential reservoir;

(viii) The results of electrical resistivity surveys;

(ix) The results of magnetic, gravity, and airborne infrared geophysical surveys; and

(x) The information obtained through other geophysical methods such as microseismic, seismic ground noise, electromagnetic, and telluric surveys if such methods prove to have significant use in evaluation.

(2) For purposes of KGRA classification, a "discovery" or "discoveries" will be considered to be any well deemed by the Director, Geological Survey, to be capable of producing geothermal resources in commercial quantities and, where the geological structure is not known, "nearby" will be considered to be five miles or less from any such discovery. Lands nearby a discovery will be classified as KGRA unless the Geological Survey determines that the lands are on a different geologic structure from the discovery. Where the Geological Survey has determined the extent of a structure on which a discovery has been made, all land in that structural area contributing geothermal resources to that discovery will be deemed a KGRA regardless of the distance from the discovery.

(3) "Competitive interest" shall exist in the entire area covered by an appli-

cation for a geothermal lease if at least one-half of the lands covered by that application are also covered by another application which was filed during the same application filing period, whether or not that other application is subsequently withdrawn. Competitive interest shall not be deemed to exist in the entire area covered by an application because of an overlapping application, if less than one-half of the lands subject to the first application are covered by any other single application filed during the same application filing period; however, some of the lands subject to the first application may be determined to be KGRA pursuant to the first sentence of this subparagraph (3).

(1) "Primarily valuable" means the principal mineral value for which the leasehold is being produced.

§ 3200.0-6 Preleasing procedures.

(a) When an area is initially considered for geothermal leasing or when the need arises, the Director shall request other interested Bureaus and Federal agencies to prepare reports describing, to the extent known, resources contained within the general area and the potential effect of geothermal resources operations upon the resources of the area and its total environment.

(b) Prior to the final selection of tracts for leasing, the Director, or the head of the agency charged with the administration of the surface, when requested by the Director, shall evaluate fully the potential effect of the leasing program on the total environment, fish and other aquatic resources, wildlife habitat and populations, aesthetics, recreation, and other resources in the entire area during exploratory, developmental, and operational phases. This evaluation will consider the potential impact of the possible development and utilization of the geothermal resources including the construction of power generating plants and transmission facilities on lands which may or may not be included in a geothermal lease. To aid him in his evaluation and selection of tracts the Director may request and consider the views and recommendations of appropriate Federal agencies, may hold public hearings after appropriate notice, and may consult with State agencies, organizations, industries, and individuals, and shall consider all other potential uses of the land and its natural resources. If the Director determines that the issuance of leases in an area would be a major Federal action significantly affecting the quality of the human environment, he shall issue no leases in that area unless an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)) has been issued. The Director shall develop special terms and conditions to be included in leases when they are needed to protect the environment, to permit use of the land for other purposes, and to protect other natural resources. If tracts are offered for competitive leasing, any terms and conditions to be included in leases for such tracts shall be pub-

lished in the notice announcing the availability of the land for leasing.

§ 3200.0-7 Cross reference.

(a) The regulations governing operations under geothermal leases are found in 30 CFR Part 270.

(b) The regulations setting forth the basic policies for management of the public lands are found in Part 1725 of this chapter.

§ 3200.0-8 Use of surface.

(a) A lessee shall be entitled to use for the production, utilization, and conservation of geothermal resources only so much of the surface of the leased Federal lands as is deemed necessary for such purposes. The lessee shall have the right to use so much of the leased lands as may be deemed necessary for a power generation plant or a commercial or industrial facility, and may apply for the right to use so much of other Federal lands as may be deemed necessary for such purposes; however, any use of the leased lands or other Federal lands for a power generation plant or a commercial or industrial facility will be authorized only under a separate permit issued by the appropriate agency for that specific use and subject to all terms and conditions which it may include in that permit. The uses of the lands within the area of operation are subject to the supervision of the supervisor, and the uses of the remaining leased lands or other Federal lands are subject to the supervision of the appropriate surface management agency. The lessee shall not be entitled to use any mineral materials subject to the Materials Act except as provided by Part 3600 of this chapter.

(b) Operations under other leases or uses on the same lands shall not unreasonably interfere with or endanger operations under leases issued under these regulations nor shall operations under these regulations unreasonably interfere with or endanger operations under any lease, license, claim, permit, or other authorized use pursuant to the provisions of any other Act.

Subpart 3201—Available Lands; Limitations, Unit Agreements

§ 3201.1 Lands subject to geothermal leasing.

§ 3201.1-1 General.

Subject to the exceptions listed below, geothermal leases may be issued in combination or separately for (a) lands administered by the Secretary of the Interior; (b) national forest lands or other lands administered by the Department of Agriculture through the Forest Service; and (c) geothermal resources in lands which have been conveyed by the United States subject to a reservation to the United States of geothermal resources.

§ 3201.1-2 Department of the Interior.

(a) Except as provided in this section, leases may be issued in accordance with the regulations in this part for with-

drawn lands, for acquired lands, and for geothermal resources in lands which have passed from Federal ownership subject to a reservation to the United States of the geothermal resources therein where such lands or resources are administered by the Secretary of the Interior.

(b) Notwithstanding any other provision in these regulations, geothermal leases shall not be issued for: (1) Lands which the Secretary has identified or may identify as being necessary to the performance of his or any other Federal agency's authorized functions, and on which geothermal resource development would in his judgment interfere with such functions; or (2) lands respecting which the Secretary has made or may make a finding that the issuance of geothermal leases would be contrary to the public interest. Upon receipt of an application for a geothermal lease affecting lands withdrawn under section 3 of the Reclamation Act of 1902 (43 U.S.C. 416) or any other appropriate authority, notice thereof and an opportunity to comment thereon shall be given to the head of the agency for whose benefit the withdrawal was made. No geothermal lease affecting lands withdrawn for any agency outside the Department of the Interior shall be leased without the consent of the head of the agency for which the lands are withdrawn. Where leases are issued under Part 3210, 3211, or 3220 for lands neighboring such reserved lands, the lessees shall be required to perform such lease operations and take such measures as are prescribed by the Secretary for the protection of the Federal interests therein.

§ 3201.1-3 Department of Agriculture.

Leases for lands withdrawn or acquired in aid of functions of the Department of Agriculture, for example, lands administered by the Forest Service, may be issued by the Secretary of the Interior only with the consent of, and subject to such terms and conditions as may be prescribed by, the head of that Department to insure adequate utilization of the lands for the purpose for which they were withdrawn or acquired.

§ 3201.1-4 Federal Power Commission.

Leases for lands to which section 24 of the Federal Power Act, as amended (16 U.S.C. 818), is applicable, may be issued by the Secretary of the Interior only with the consent of, and subject to, such terms and conditions as the Federal Power Commission may prescribe to insure adequate utilization of such lands for power and related purposes.

§ 3201.1-5 Patented lands.

(a) Geothermal resources in lands which have passed from Federal ownership subject to a reservation to the United States of geothermal resources therein may be leased under the regulations in this group subject to the provisions in this part and to such terms and conditions as may be prescribed by the authorized officer to insure adequate protection of the patented lands and any improvements thereon.

(b) Geothermal resources in lands the surface of which has passed from Federal ownership, but in which the minerals have been reserved to the United States shall not be developed or produced except under terms and conditions prescribed by the Secretary and pursuant to any agreements made therefor while the question of the title to such resources is being resolved pursuant to the provisions of section 21 (b) of the Act.

§ 3201.1-6 Excepted areas.

Leases shall not be issued for lands which are: (a) Administered under the National Park System; (b) within a national recreation area; (c) in a fish hatchery administered by the Secretary, wildlife refuge, wildlife range, game range, wildlife management area, or waterfowl production area, or for lands acquired or reserved for the protection and conservation of fish and wildlife which are threatened with extinction; or (d) tribally or individually owned Indian trust or restricted lands, within or without the boundaries of Indian reservations.

§ 3201.2 Acreage limitations.

(a) *Maximum holdings.* No citizen, association, corporation, or governmental unit shall take, hold, own, or control at one time, whether acquired directly from the Secretary or otherwise, any direct or indirect interest in Federal leases and in applications for Federal leases in any one State exceeding 20,480 acres. Nor may any citizen, association, or corporation be permitted to convert mineral leases, permits, applications therefor, or mining claims, pursuant to the provisions of section 4 (a)-(f) of the Act into geothermal leases for more than 10,240 acres. No citizen, association, corporation, or governmental unit shall be charged with the acreage embraced in an application for a lease until that application has been given priority over all other applications for lease for all or some of the land embraced in that application.

(b) *Computation.* In computing acreage holdings or control, the accountable acreage of a party owning an undivided interest in a lease shall be that party's proportionate part of the total lease acreage. Likewise, the accountable acreage of a party owning an interest in a corporation or association shall be his proportionate part of the corporation's or association's accountable acreage except that no person shall be charged with his pro rata share of any acreage holdings of any association or corporation, unless he is the beneficial owner of more than 20 per centum of the stock or other instruments of ownership or control of that association or corporation. Parties owning a royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with a similar percentage of the total lease acreage.

(1) An association shall not be deemed to exist between the parties to a contract for development of leased lands, whether or not coupled with an interest in the

lease, nor between colessees, but each party to any such contract or each colessee will be charged with his proportionate interest in the lease. No holding of acreage in common by the same persons in excess of the maximum acreage specified in the law for any one lessee will be permitted.

(2) Lessees holding acreage in common shall be considered a single entity and cannot hold acreage in excess of the maximum specified in the law for any one lessee.

(c) *Excepted acreage.* Leases or applications for leases committed to any unit or cooperative plan approved or prescribed by the Secretary of the Interior shall not be included in computing accountable acreage. Leases or applications for leases subject to an operating, drilling or development contract approved by the Secretary of the Interior pursuant to section 18 of the act, other than communization agreements, shall be excepted in determining the accountable acreage of the lessees or operators.

(d) *Excess acreage.* (1) Where, as the result of the termination or contraction of a unit or cooperative plan, or the elimination of a lease from operating, drilling, or development plan, a party holds or controls excess accountable acreage, such party shall have 90 days from such termination or contraction or elimination in which to reduce his holdings to the prescribed limitation and to file proof of such reduction in the proper BLM office.

(2) If any person holding or controlling only leases or interests in leases if found to hold accountable acreage in violation of the provisions of this section and of the act, the last lease or leases or interest or interests acquired by him which created the excess acreage holdings shall be canceled or forfeited in their entirety, even though only part of the acreage in the lease or interest constitutes excess holdings, unless it can be shown to the satisfaction of the Director of the Bureau of Land Management that the holding or control of the excess acreage is not the result of negligence or willful intent in which event the lease or leases shall be canceled only to the extent of the excess acreage.

(3) Any person holding or controlling leases or interests in leases only, or applications for leases only, or both leases or interests in leases and applications for leases below the acreage limitation provided in this section, shall be subject to these rules:

(i) If he files an application which causes him to exceed the acreage limitation, that application will be rejected.

(ii) For tracts not subject to the simultaneous filing procedures of subpart 3211, if he files a group of applications at the same time, any one of which causes him to exceed the acreage limitations, the entire group of applications will be rejected. (iii) If he files an application in the drawing procedures under subpart 3211, he shall be charged with the acreage thereof only if his application is the only application filed or his application is successfully drawn so that

his application has first priority. If that application causes him to exceed the acreage limitation, the application will be rejected. If he files at the same time a group of applications for tracts subject to the drawing procedures under subpart 3211, any offer which is successfully drawn after he reaches the acreage limitation shall be rejected.

(4) If any person holding or controlling both leases or interests in leases and applications for leases, or only applications for leases below the acreage limitation provided in this section, acquires a lease or leases, or an interest or interests therein, which cause him to exceed the acreage limitation, his most recently filed application for lease or applications for leases then containing acreage in excess of the limitation provided in this section will be rejected in its or their entirety. For the purpose of this subparagraph, time of filing shall be determined by the time of filing marked on the application, or, if the same time is marked on two or more applications, by the serial number of the applications.

(5) The provisions of this paragraph shall not limit any action which the Department may take with respect to excess acreage holdings in cases not otherwise covered by this paragraph.

(e) *Showing required.* No lease will be issued and no transfer or operating agreement will be approved until it has been shown that the applicant, operator, or transferee is entitled to hold the acreage or obtain the operating rights. At any time upon request by the authorized officer, the record title holder of any lease or a lease operator or a lease applicant may be required to file in the proper BLM office a statement, showing as of a specified date the serial number and the date of each lease of which he is the record holder, or under which he holds operating rights, and each application for lease held or filed by him in the particular State setting forth the acreage covered thereby, and the nature, extent and acreage interest, including royalty interests held by him in any geothermal lease of which the reporting party is not the lessee of record, whether by corporate stock ownership, interest in unincorporated associations and partnerships, or in any other manner.

§ 3201.3 Leases within unit areas.

Before issuance of a geothermal lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently but will be required to perform his operations in a manner which the Supervisor deems to be consistent with the unit operations.

Subpart 3202—Qualifications of Lessees**§ 3202.1 Who may hold leases.**

Leases may be issued only to: (a) Citizens of the United States who have reached the age of majority; (b) associations of such citizens; (c) corporations organized under the laws of the United States, any state or the District of Columbia; or (d) governmental units, including, without limitation, municipalities. The term "association" includes a partnership.

§ 3202.2 Statements required to be submitted.**§ 3202.2-1 General.**

(a) Each applicant for a lease is required to submit with his application a statement that his interests, direct and indirect, in Federal geothermal leases and applications, do not exceed the acreage limitations prescribed in § 3201.2, together with a statement of his citizenship.

(b) If the applicant is an association or corporation the application must be accompanied by: (1) A statement showing that it is authorized to hold geothermal leases; (2) a statement that the officer executing the application is authorized to act on behalf of the association or corporation; (3) a statement setting forth the State in which it was incorporated or formed and the names and addresses of all members or stockholders holding more than 20 percent of the association or corporation; and (4) a statement from each person owning or controlling more than 20 percent of the association or corporation setting forth his citizenship and his holdings.

(c) If the applicant is a municipality, or governmental unit, the application must be accompanied by: (1) A statement showing that it is authorized to hold geothermal leases; (2) a statement that the officer executing the application is authorized to act on behalf of the municipality or governmental unit, and (3) a copy of its governing body's resolution authorizing such action.

§ 3202.2-2 Guardian or trustee.

(a) *Guardian.* If the application is made by a guardian, he must submit: (1) A certified copy of the court order authorizing him to act as guardian and, in behalf of his ward, to enter into contractual agreements and to fulfill all obligations arising under the lease; and (2) statements as to the citizenship and holdings under the Act of himself and of each person under his guardianship for whom the application is made.

(b) *Trustee.* If the application is made by a trustee, he must submit a copy of the instrument establishing the trust or a certified copy of the court order authorizing him to act as trustee, in behalf of the beneficiary, as to all obligations arising under the lease; and statements as to the citizenship and holdings under the Act of himself and of each beneficiary.

§ 3202.2-3 Attorney-in-fact.

If an application is filed by an attorney-in-fact, it must be accompanied by a statement as to his authority to act.

§ 3202.2-4 Statements previously filed.

Where the statements required by § 3202.2 have been previously filed a reference by serial number to the record in which they have been filed, together with a statement as to any amendments will be accepted.

§ 3202.2-5 Showing as to sole party in interest.

Each application must be accompanied either by a signed statement by the applicant that he is the sole party in interest, or by a signed statement by the applicant setting forth the names of all other persons who have an interest in the lease and their qualifications to hold a lease. Where the applicant is not the sole party in interest, separate statements must be signed by each of the parties and by the applicant setting forth the nature of the agreement between them. All interested parties must furnish evidence of their qualifications to hold such lease interest. These separate statements must be filed in the proper BLM office not later than 15 days after the filing of the application.

§ 3202.2-6 Heirs and devisees (estates).

If an applicant or a successful bidder dies before the lease is issued, the lease will be issued to the executor or administrator of the estate if probate of the estate has not been completed, and if probate has been completed, or is not required, to the heirs or devisees, provided there is filed in all cases an application to lease in compliance with the requirements of this section which will be effective as of the effective date of the original application filed by the deceased. If there are any minor heirs or devisees, the application can only be made by their legal guardian or trustee in his name. Each such application must be accompanied by the following information:

(a) Where probate of the estate has not been completed:

(1) Evidence that the person who as executor or administrator submits the application, and bond form if a bond is required, has authority to act in that capacity and to sign the application and bond forms.

(2) A statement over the signature of each heir or devisee or, if the heir or devisee is a minor, over the signature of his legal guardian or trustee, concerning citizenship and holdings.

(3) Evidence that the heirs or devisees are the heirs or devisees of the deceased applicant or successful bidder and are the only heirs or devisees of the deceased.

(b) Where the executor or administrator has been discharged or no probate proceedings are required:

(1) A certified copy of the will or decree of distribution, if any, and if not, a

statement signed by the heirs that they are the only heirs of the applicant or successful bidder and the provisions of the law of the deceased's last domicile showing that no probate is required.

(2) A statement over the signature of each of the heirs or devisees with reference to holdings and citizenship. If the heir or devisee is a minor, the statement must be over the signature of the guardian or trustee.

§ 3202.2-7 Fractional present interests.

(a) An application for a fractional present interest noncompetitive lease must be executed on a form approved by the Director and it must be accompanied by a statement showing the extent of the applicant's ownership of the operating rights to the fractional geothermal resources interest not owned by the United States in each tract covered by the application to lease. Ordinarily, the issuance of a lease to one who, upon such issuance, would own less than 50 percent of the operating rights in any such tract, will not be regarded as in the public interest, and an application leading to such results will be rejected.

(b) Geothermal resources in lands which have passed from Federal ownership but which lands have been purchased by the Federal Government with a fractional interest in the geothermal resources shall not be developed or produced, except under prescribed terms and conditions and pursuant to any agreement made between the parties of interest prior to the resolution of the question of ownership of the geothermal resources.

Subpart 3203—Leasing Terms**§ 3203.1 Primary and additional term.****§ 3203.1-1 Dating of leases.**

All geothermal leases will be dated as of the first day of the month following the date on which the leases are signed on behalf of the lessor except that, where prior written request has been made, a lease may be dated as of the first day of the month within which it is so signed. A renewal lease will be dated from the termination of the original lease.

§ 3203.1-2 Primary term.

All leases shall be for a primary term of 10 years.

§ 3203.1-3 Additional term.

(a) If geothermal steam is produced or utilized in commercial quantities within the primary term of a lease, that lease shall continue for so long thereafter as geothermal steam is produced or utilized in commercial quantities, but the lease shall in no event continue for more than 40 years after the end of the primary term except that the lessee shall have a preferential right to a renewal of his lease for a second 40-year term upon such terms and conditions as the authorized officer deems appropriate, if at the end of the first 40-year term the lands are not needed for another pur-

pose and geothermal steam is produced or utilized in commercial quantities. Production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of commencement of the primary term of the lease.

§ 3203.1-4 Extensions.

(a) A lease which has been extended by reason of production, or on which geothermal steam has been produced, and which has been determined by the Secretary to be incapable of further commercial production and utilization of geothermal steam may be further extended so long as one or more valuable byproducts are produced in commercial quantities but for not more than 5 years.

(b) Where the lessee commenced actual drilling operations prior to the end of the primary term and those operations are being diligently prosecuted at that time, a lease may also be extended for a period of five years and so long thereafter as geothermal steam is produced or utilized in commercial quantities (but for not more than 35 years).

(c) A lease committed to a cooperative plan, communitization agreement or a unit plan under or for which actual drilling operations were commenced prior to the end of the primary term of the lease, shall, if such operations are being diligently prosecuted at that time be extended for a period of five years and so long thereafter as geothermal steam is produced or utilized in commercial quantities (but for not more than thirty five years).

(d) Any lease on which there has been a suspension of operations or production, or both, under 30 CFR 270.17 shall continue in effect for the life of the suspension and, at the end of the suspension, shall be extended for a period equal to that portion of the primary term during which the suspension was in effect.

(e) If, at the end of 40 years after the conclusion of the primary term, steam is being produced or utilized in commercial quantities and the lands are not needed for other purposes, the lessee shall have a right to a renewal of the lease for a second 40-year term on such terms and conditions as the Secretary deems appropriate.

§ 3203.1-5 Segregation of leases on commitment to, or contraction of, cooperative or unit plan or communitization agreement.

(a) Any lease committed to any cooperative plan, communitization agreement, or unit plan, which covers lands within and lands outside the area covered by the plan or agreement, shall be segregated, as of the effective date of that plan or agreement, into separate leases, one covering the lands committed to that plan or agreement and the other as to

the lands not so committed. The segregated lease covering the portion of the lands not subject to that plan or agreement shall not be entitled to an extension by reason of the segregation, but the term of the lease of such segregated lands shall be as provided in the original lease.

(b) When only part of the land subject to a lease included in a cooperative plan, a communitization agreement, or a unit plan is excluded from that plan or agreement because of the contraction of the area subject to that plan or agreement, the part of the lease which is excluded and the part which remains subject to the plan or agreement shall be segregated into separate leases. The term of the segregated lease composed of the excluded land shall not be extended because of production in commercial quantities or the existence of a producible well on the segregated lease remaining subject to the cooperative or unit plan or the communitization agreement or because actual drilling operations were at the time of contraction being conducted on that other lease, but the term of the lease composed of the excluded land shall be as provided in the original lease.

§ 3203.1-6 Conversion to mineral leases or mining claims.

(a) If the byproducts capable of being produced in commercial quantities are leasable under the Mineral Leasing Act of February 25, 1920 as amended and supplemented (30 U.S.C. sections 181-287), or under the Mineral Leasing Act for Acquired Lands (30 U.S.C. sections 351-359), and the leasehold is primarily valuable for the production thereof, the lessee shall be entitled to convert his geothermal lease to a mineral lease under and subject to all the terms and conditions of the appropriate Act upon application at any time before expiration of the lease extension by reason of by-product production.

(b) The lessee shall be entitled to locate under the mining laws all minerals which are not leasable and which would constitute a byproduct if commercial production or utilization of geothermal steam continued. The lessee, in order to acquire the rights herein granted him, shall complete the location of mineral claims within 90 days after the termination of the geothermal lease.

(c) Any lease converted under paragraph (a) of this section or under paragraph (b) of this section affecting lands withdrawn or acquired in aid of a function of a Federal department or agency, including the Department of the Interior, shall be subject to such additional terms and conditions as may be prescribed by that department or agency with respect to the additional operations or affects resulting from such conversion upon the utilization of the lands for the purpose for which they are administered.

§ 3203.2 Lease acreage limitation.

A geothermal lease may not embrace more than 2,560 acres in a reasonably compact area, except where a departure is occasioned by an irregular sub-

division or subdivisions, entirely within an area of six miles square or within an area not exceeding six surveyed or protracted sections in length or width measured in cardinal directions. Where a departure is occasioned by an irregular subdivision, the leased acreage may exceed 2,560 acres by an amount which is smaller than the amount by which the area would be less than 2,560 acres if the irregular subdivision were excluded. No lease will be issued for less than 640 acres, except at the discretion of the Secretary, or where a departure is occasioned by an irregular subdivision, or as provided for in Subpart 2330 of this chapter. In event of a departure, the leased acreage may be less than 640 acres by amount which is smaller than the amount by which the area would be more than 640 acres if the irregular subdivision were added.

§ 3203.3 Consolidation of leases.

Two or more contiguous leases issued to the same lessee may be consolidated if the total combined acreage does not exceed 2,560 acres. Except where a departure is caused by an irregular subdivision or subdivisions as stated in § 3203.2.

§ 3203.4 Description of lands.

Applications and nominations shall include a description of the lands sought to be included in a geothermal lease. If the lands have been surveyed under the public land rectangular system, each application or nomination shall describe the lands by legal subdivision, section, township, and range. If the lands have not been so surveyed, each application shall describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to a monument or to a prominent topographic feature. When protracted surveys have been approved and the effective date thereof published in the FEDERAL REGISTER, each application or nomination for lands shown on such protracted surveys, filed on or after such effective date, shall describe the lands according to the legal subdivision, section, township, and range shown on the approved protracted surveys.

§ 3203.5 Diligent exploration.

Each geothermal lease will include provisions for the diligent exploration of the leased resources until there is production in commercial quantities applicable to the lands subject to the lease, and failure to perform such exploration may subject the lease to termination. Diligent exploration means exploration operations (subsequent to the issuance of the lease) on, or related to the leased lands, including, but not limited to, operations such as geochemical surveys, heat flow measurements, core drilling, or drilling of a test well. Exploration operations, in order to qualify as diligent exploration, must be approved by the Supervisor, and evidence of all expendi-

tures therefor and the results thereof must be submitted annually to the Supervisor in compliance with applicable regulations and Geothermal Resources Operational Orders or upon his request. Moreover, after the fifth year of the primary lease term, exploration operations, in order to qualify as diligent exploration for a year, must entail expenditures during that year equal to at least two times the sum of (a) the minimum annual rental required by statute, and (b) the amount of rental for that year in excess of the fifth year's rental, but in no event shall the required expenditures exceed twice the rental for the 10th year. However, any expenditures for diligent operations during the first 5 years of the lease and any expenditures for diligent operations during any subsequent year in excess of the minimum required expenditures for that year may be credited, in such proportions as the lessee may designate, against (1) expenditures needed to qualify exploration operations as diligent operations for future years, or (2) any rental requirement for that or any future years in excess of the fifth year's rental pursuant to § 3205.3-3.

Subpart 3204—Surface Management Requirements, Special Requirements

§ 3204.1 General.

A lessee shall comply with and be bound by the following general terms and conditions, the specific requirements contained in the lease stipulations and any GRO orders that may be issued pursuant to 30 CFR 270.11. Assuring compliance with the requirements of this section is the responsibility of the Supervisor as to the lands within the area of operations and is the responsibility of the appropriate land management agency as to the remaining lands in the lease.

(a) *Equal employment opportunity.* The lessee shall comply with Executive Order 11246, as amended, 30 F.R. 12319 (1965), and regulations issued pursuant thereto, 41 CFR Chapter 60 and Part 17 of this chapter.

(b) *Public access.* (1) The lessee shall permit free and unrestricted public access to and upon the leased lands for all lawful and proper purposes except in areas where such access would unduly interfere with operations under the lease or would constitute a hazard to health and safety. Restrictions on access will not be allowed without prior approval.

(2) During construction, the lessee shall regulate public access and vehicular traffic to protect the public, wildlife, and livestock from hazards associated with the project. For this purpose, the lessee shall provide warnings, fencing, flag men, barricades, and other safety measures as appropriate.

(c) *Pollution abatement.* The lessee shall comply with all Federal and State standards with respect to the control of all forms of air, land, water, and noise pollution, including, but not limited to, the control of erosion and the disposal of liquid, solid, and gaseous wastes. The

Supervisor may, in his discretion, establish additional and more stringent standards, and, if he does so, the lessee shall comply with those standards. The lessee, in addition to any other action required by those standards, shall take the following specific actions:

(1) *Pesticides and herbicides.* The lessee shall comply with all rules issued by the Department of the Interior and the Environmental Protection Agency pertaining to the use of poisonous substances on public lands.

(2) *Water pollution.* The lessee shall conduct lease operations and maintenance in a manner consistent with Federal and State water quality standards and public health and safety standards. Toxic materials shall not be released into any surface waters or underground waters. Reinjection of waste geothermal fluids into geothermal or other suitable aquifers may be permitted when approved by the Supervisor.

(3) *Air pollution.* The lessee shall control emissions from operations in accordance with Federal and State air quality standards.

(4) *Erosion control.* The lessee shall minimize disturbance to vegetation, drainage channels, and streambanks. The lessee shall employ such soil and resource conservation and protection measures on the leased lands as the Supervisor deems necessary.

(5) *Noise control.* The lessee shall control noise emissions from operations.

(d) *Sanitation and waste disposal.* The lessee shall remove or dispose of all waste generated in connection with the operation in a manner acceptable to the Supervisor. The term "waste" as used in this stipulation means all discarded matter, including but not limited to human waste, trash, garbage, refuse, petroleum products, and waste material resulting from the extraction and processing operation.

(e) *Land subsidence, seismic activity.* The lessee shall take precautions necessary to minimize land subsidence or seismic activity which could result from production of geothermal resources and the disposal of waste fluid where such activity could damage or curtail the use of the geothermal resources or other resources, or other uses of the land and take such measures as stipulated to: (1) monitor operations for land subsidence and for seismic activity; and (2) maintain, and when requested, make available to the lessor, records of all monitoring activities.

(f) *Aesthetics.* The lessee shall take aesthetics into account in the planning, design, and construction of facilities on the leased premises.

(g) *Fish and wildlife.* The lessee shall employ such measures as are deemed necessary to protect fish and wildlife and their habitat.

(h) *Antiquities and historical sites.* The lessee shall conduct activities on discovered, known or suspected archeological, paleontological, or historical sites in accordance with lease terms or specific instructions.

(i) *Restoration.* The lessee shall provide for the restoration of all disturbed lands in an approved manner.

(j) The lessee shall submit semi-annual reports to the authorized officer on compliance with the requirements of paragraphs (b)-(i) of this section and on any significant environmental damage suffered by the lands subject to his lease. However, if, after operations have begun, the lessee is required to submit a similar report under 30 CFR 270.76, he may fulfill the requirement of this subsection by submitting to the authorized officer a copy of that report.

§ 3204.2 Waste prevention.

All leases shall be subject to the condition that the lessee will, in conducting his exploration, development, and operations, use all reasonable precautions to prevent waste of geothermal resources and other resources found or developed in the leased lands.

§ 3204.3 Readjustment of terms and conditions.

(a) (1) Except as otherwise provided by law, the terms and conditions of any geothermal lease may be readjusted as determined by the authorized officer at not less than 10-year intervals beginning 10 years after the date geothermal steam is produced. Each lease shall provide for such readjustments.

(2) The authorized officer shall give notice to the lessee of any proposed readjustment of the terms and conditions of the lease and the nature thereof, and unless the lessee files with the authorized officer an objection to the proposed terms and conditions or relinquishes the lease within 30 days after receipt of such notice, the lessee shall be deemed conclusively to have agreed to such terms and conditions. If the lessee files objections, and agreement cannot be reached between the authorized officer and the lessee within a period of 60 days, the lease may be terminated by either party, subject to the provisions of § 3000.4 of this chapter. If the lessee files objections to the proposed readjusted terms and conditions, the existing terms and conditions, except for those concerning rental and royalty rates, will remain in effect until there has been an agreement between the authorized officer and the lessee on the new terms and conditions to be applied to the lease or until the lease is terminated. The readjustment of any terms concerning rental and royalty rates will be subject to § 3205.3.

(b) Any readjustment of the terms and conditions of any lease of lands withdrawn or acquired in aid of a function of a Federal department or agency may be made only with the approval of that other agency.

§ 3204.4 Reservation to the United States of oil, hydrocarbon gas, and helium.

The United States reserves the ownership of and the right to extract oil, hydrocarbon gas, and helium from all geothermal resources produced from lands leased under the Act. Whenever the right

to extract oil, hydrocarbon gas, and helium, from geothermal resources produced from such lands is exercised, it shall be exercised so as to cause no substantial interference with the production of geothermal resources from such lands.

§ 3204.5 Compensation for drainage; compensatory royalty.

(a) Upon a determination by the Supervisor that lands owned by the United States are being drained of geothermal resources by wells drilled on adjacent or cornering lands, the authorized officer may execute agreements with the owners of adjacent or cornering lands whereby the United States, or the United States and its lessees, shall be compensated for such drainage, such agreements to be made with the consent of any lessee affected thereby. The precise nature of any agreement will depend on the conditions and circumstances involved in the particular case.

(b) Where land in any lease is being drained of its geothermal resources by a well either on a Federal lease issued at a lower rate of royalty or on land not the property of the United States, the lessee must drill and produce all wells necessary to protect the leased lands from drainage. In lieu of drilling such wells, the lessee may, with the consent of the Supervisor, pay compensatory royalty in the amount determined in accordance with 30 CFR Part 270.

§ 3204.6 Patented lands.

The terms and conditions of any geothermal resource lease for lands conveyed by the United States subject to a reservation to the United States of geothermal resources may be readjusted upon notification to the surface owner.

Subpart 3205—Service Charges, Rentals and Royalties.

§ 3205.1 Payments.

§ 3205.1-1 Form of remittance.

Remittances required under these regulations may be made by cash payment, check, certified check, bank draft, bank cashier's check, or money order. All remittances will be deposited as received.

§ 3205.1-2 Where submitted.

(a) *Rentals on nonproducing leases.* Rentals under all nonproducing leases issued shall be paid at the proper BLM office. All remittances to the Bureau of Land Management shall be made payable to the Bureau of Land Management.

(b) *Other payments.* All royalties on producing leases, communitized leases in producing well units, unitized leases in producing unit areas, leases on which compensatory royalty is payable and all payments under easements for directional drilling are to be paid to the Supervisor. All remittances to the Supervisor shall be made payable to the U.S. Geological Survey.

§ 3205.2 Service charges.

(a) *Competitive lease applications.* No service charge is required.

(b) *Noncompetitive lease applications.* Applications for noncompetitive leases must be accompanied by a nonrefundable service charge of \$50 for each application.

(c) *Assignments.* Applications for approval of an assignment of a lease or interest therein must be accompanied by a nonrefundable service charge of \$50 for each application.

(d) *Nominations.* No service charge is required.

§ 3205.3 Rentals and royalties.

§ 3205.3-1 Payment with application.

Each application, except an application filed pursuant to Subpart 3221, of this part, must be accompanied by payment of the first year's rental of not less than \$1 per acre or fraction thereof based on the total acreage included in the application. An application accompanied by a payment of the first year's rental which is deficient by not more than 10 percent will be approved by the authorized officer provided all other requirements are met, but, if the additional rental is not paid within 30 days from notice, the application or the lease, if issued, will be canceled.

§ 3205.3-2 Payment of annual rental.

(a) Annual rental in the amount specified in the lease which shall be not less than \$1 per acre or fraction thereof must be paid in advance and must be received by the proper BLM office on or before the anniversary date of the lease. If there is no well on the leased lands capable of producing geothermal resources in commercial quantities, the failure to pay rental on or before the anniversary date shall terminate the lease by operation of law, except as provided by § 3245.2.

(b) If, on the anniversary date of the lease, less than a full year remains in the lease term, the rentals shall be payable in the same proportion as the period remaining in the lease term is to a full year. The rentals shall be prorated on a monthly basis for the full months, and on a daily basis for the fractional month remaining in the lease term. For the purpose of prorating rentals for a fractional month, each month will be deemed to consist of 30 days.

(c) If the term of a lease for which prorated rentals have been paid is further extended to or beyond the next anniversary date of the lease, rentals for the balance of the lease year shall be due and payable on the 1st day of the first month following the date through which the prorated rentals were paid. If the rentals are not paid for the balance of the lease year, the lease will be subject to cancellation. However, if the anniversary date occurs before the end of the notice period, the rental for the following lease year shall nevertheless be due on the anniversary date and failure to pay the full rental for that year on or before that date shall cause the lease to terminate automatically by operation of law except as provided by § 3245.2. The lessee shall not be relieved of liability for rental due for the balance of the previous lease year.

(d) If the payment is due on a day in which the proper BLM office to receive payment is not open, payment received on the next official working day will be deemed to be timely.

§ 3205.3-3 Escalating rental rates.

To encourage the orderly and timely development of geothermal leases, all leases issued pursuant to the regulations in this Group will provide that, beginning with the sixth year and for each year thereafter until the lease year beginning on or after the commencement of production of geothermal resources in commercial quantities, the rental will be set by the authorized officer as the amount of rental for the preceding year plus an additional rental of \$1 per acre, but the authorized officer may, upon a showing of sufficient justification by the lessee, waive the payment of all or any portion of the additional rental.

§ 3205.3-4 Fractional interests.

Rentals, minimum royalties, and royalties payable for lands in which the United States owns an undivided fractional interest shall be in the same proportion to the rentals, minimum royalties, and royalties provided for in § 3205.3, as the undivided fractional interest of the United States in the geothermal resources is to the full geothermal resources interest.

§ 3205.3-5 Royalty on production.

Royalty shall be paid at the following rates on geothermal resources:

(a) A royalty, as set forth in the lease, of not less than 10 per centum and not more than 15 per centum of the amount or value of steam, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee; (b) a royalty, as set forth in the lease, of not more than 5 per centum of any byproduct derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee, except that as to any byproduct which is a mineral named in section 1 of the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181), the rate of royalty for such mineral shall be the same as that provided in that Act and the maximum rate of royalty for such mineral shall not exceed the maximum royalty applicable under that Act; (c) In no event shall the royalty on any producing lease for any lease year, commencing with the lease year beginning on or after the commencement of production in commercial quantities, be less than \$2 per acre or fraction thereof, and this minimum royalty, in lieu of rental, shall be payable at the expiration of each lease year.

§ 3205.3-6 Royalty on commercially demineralized water.

All geothermal leases issued pursuant to the provisions of this group shall provide for the payment to the lessor of a royalty on commercially demineralized water at a rate to be specified in the

lease of not more than 5 per centum of the value of such commercially demineralized water that has been sold or utilized by the lessee or is reasonably susceptible of sale or utilization by the lessee, except that no payment of a royalty will be required on such water if it is used in plant operation for cooling or in the generation of electric energy or otherwise.

§ 3205.3-7 Waiver, suspension or reduction of rental or royalty.

(a) The authorized officer may waive, suspend, or reduce the rental or royalty for any lease or portion thereof in the interests of conservation and to encourage the greatest ultimate recovery of geothermal resources if he determines that this is necessary to promote development or that the lease cannot be successfully operated under the lease terms. No waiver, suspension or reduction of rental or royalty will be granted where the only reason for the request for such relief is the unavailability of power generating facilities to utilize the geothermal steam.

(b) An application hereunder shall be filed in triplicate with the Supervisor, and must: (1) Contain the serial number of the leases and the names of the lessee and operator; (2) show the number, location, and status of each well that has been drilled, a tabulated statement for each month covering a period of not less than 6 months prior to the date of filing the application of the aggregate amount of production subject to royalty computed in accordance with the operating regulations, the number of wells counted as producing each month, and the average production per well per day; (3) contain a detailed statement of expenses and costs of operating the lease, the income from the sale of any leased products and all facts tending to show whether the wells can be successfully operated using the royalty or rental fixed in the lease; and (4) where the application is for a reduction in royalty, furnish full information as to whether royalties or payments out of production are paid to others than to the United States, the amounts so paid, and the efforts made to reduce them. The applicant must also file agreements of the holders to a comparable reduction of all other royalties from the leasehold to an aggregate not in excess of one-half the Government royalties.

§ 3205.3-8 Application for and effect of suspension of operations and production.

(a) Applications by lessees for suspensions of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease) shall be filed in triplicate with the Supervisor, who is authorized to act on applications filed pursuant to this section and to terminate suspensions which have been or may be granted. Complete information must be furnished showing the necessity of the relief sought.

(b) A suspension shall take effect as

of the time specified in the order of the Supervisor. Rental or minimum royalty payments will be suspended during any period of suspension of all operations and production directed, or assented to, by the Supervisor, beginning with the first day of the lease month in which the suspension of operations and production becomes effective or, if the suspension of operations and production becomes effective on any date other than the first day of a lease month, beginning with the first day of the lease month following such effective date. The suspension of rental or minimum royalty payments shall end on the first day of the lease month in which operations or production is resumed. Where rentals are creditable against royalties and have been paid in advance, proper credit will be allowed on the next rental or royalty due under the lease.

(c) No lease shall be deemed to expire by reason of a suspension of either operations or production, pursuant to any order or assent of the Supervisor.

(d) If there is a well on the leased premises capable of producing geothermal resources and all operations and production are suspended pursuant to any order of the Supervisor, approval of recommencement of drilling operations will terminate the suspension as to operations but not as to production, and will terminate both the period of suspension of rental and minimum royalty payments provided in paragraph (b) of this section and the period of suspension for which an equivalent extension will be granted. However, as provided in paragraph (c) of this section, the lease will not be deemed to expire so long as the suspension of operations or production remains in effect.

(e) The relief authorized under this section may also be obtained for any leases included within an approved unit or cooperative plan of development and operation.

(f) See 30 CFR 270.17 for regulations concerning action of the Supervisor on applications filed pursuant to this section.

§ 3205.3-9 Readjustments.

The rentals and royalties of any geothermal lease may be readjusted at not less than 20-year intervals beginning 35 years after the date geothermal steam is produced as determined by the Supervisor. In the event of any such readjustment neither the rental nor royalty paid during the preceding period shall be increased by more than 50 per centum, and in no event shall the royalty payable exceed 22½ per centum. Each geothermal lease shall provide for such readjustment. The Supervisor will give notice of any proposed readjustment of rental or royalties. Unless the lessee relinquishes the lease within 30 days after receipt of such notice, he shall conclusively be deemed to have agreed to such terms and conditions. If the lessee files a protest, and no agreement can be reached between the authorized officer and the lessee within a period of 60 days, the lease may be terminated by either party,

subject to the provisions of § 3000.4 of this chapter. If the lessee files a protest to the proposed readjusted terms and conditions, the existing terms and conditions will remain in effect until there has been an agreement between the authorized officer and the lessee on the new terms and conditions to be applied to the lease or until the lease is terminated, except payments of any proposed readjusted rentals and royalties must be paid in the timely manner prescribed in these regulations and may be paid under protest. The readjusted terms and conditions will be effective as of the end of the term being adjusted.

§ 3205.4 Rental and minimum royalty liability of lands committed to cooperative or unit plans.

§ 3205.4-1 Prior to production.

All lands within any lease committed to an approved cooperative or unit plan shall at all times prior to production on any of the lands so committed remain liable for rental in accordance with § 3205.3-3.

§ 3205.4-2 After production.

As soon as production is obtained on or for any lands included in an approved cooperative or unit plan those lands which are included within the participating area of the producing well shall become liable for royalties in accordance with Subpart 3205. All other unitized lands, shall remain liable for rental in accordance with § 3205.3-3.

Subpart 3206—Lease Bonds

§ 3206.1 Types of bonds and filing.

§ 3206.1-1 Types of bonds.

(a) Bonds shall be either corporate surety bonds or personal bonds except that bonds with individual sureties may be furnished for the protection of the entryman or owner of the surface rights.

(b) Lease compliance bond. The applicant for a noncompetitive lease or the successful bidder for a competitive lease must furnish, prior to the issuance of the lease, and thereafter maintain a corporate surety bond of not less than \$10,000 conditioned on compliance with all the terms of the lease.

(c) Protection bond. A lessee will be required prior to entry on the leased lands to furnish and maintain a bond of not less than \$5,000 for indemnification for all damages occasioned to persons or property as the result of lease operations.

§ 3206.1-2 Filing of bonds.

A single original copy of the bond on forms approved by the Director must be filed in the proper BLM office. Bonds may be filed with a noncompetitive lease application to expedite action thereon, or within 30 days after receipt of notice by the applicant of the bond requirement, or as required and directed by the authorized officer. For unit bond forms see 30 CFR Part 271.

§ 3206.2 Termination of period of liability.

The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled.

§ 3206.3 Operators bond.

An operator, or, if there are more than one for different portions of the lease, each operator, shall furnish a corporate surety bond or bonds in an amount prescribed by the Supervisor.

§ 3206.4 Qualified corporate sureties.

Treasury lists. A list of companies holding certificates of authority from the Secretary of the Treasury under the Act of July 30, 1947 (6 U.S.C. 6-13), as acceptable sureties on Federal bonds is published in the FEDERAL REGISTER annually.

§ 3206.5 Nationwide bond.

In lieu of bonds required under any of the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements may furnish a bond in an amount of which must be not less than for \$150,000 for full nationwide coverage for all geothermal leases.

§ 3206.6 Statewide bond.

In lieu of any of the bonds required by the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements, may furnish a statewide bond, applicable to the State in which the leases are situated, the amount of which must be at the rate of not less than \$50,000 for each unit of coverage.

§ 3206.7 Default.

§ 3206.7-1 Payment by surety.

Where upon a default the surety makes payment to the Government of any indebtedness due under a lease, the face amount of the surety bond and the surety's liability thereunder shall be reduced by the amount of such payment.

§ 3206.7-2 Penalty.

Thereafter, upon penalty of cancellation of all of the leases covered by that bond, the principal shall post a new nationwide bond in the amount of \$150,000 or a unit bond, as the case may be, within 6 months after notice, or within such shorter period as the authorized officer may fix. However, in lieu thereof, the principal may within that time file separate bonds for each lease.

§ 3206.8 Applicability of provisions to existing bonds.

The provisions of these regulations may be made applicable to any oil and gas nationwide or statewide bond in force at the effective date of these regulations by filing in the proper BLM of-

fice a written consent to that effect and an agreement to be bound by the provisions hereof executed by the principal and the surety. Upon receipt thereof the bond will be deemed to be subject to the provisions of these regulations.

Subpart 3207—[Reserved]

Subpart 3208—[Reserved]

Subpart 3209—Geothermal Resources Exploration Operations

§ 3209.0-1 Purposes.

(a) The purpose of the regulations in this Subpart 3209 is to establish procedures to be followed in conducting exploration operations on the public land for geothermal resources. The regulations in this subpart are not applicable to exploration operations conducted pursuant to a geothermal resources lease.

(b) The rights obtained under this subpart do not include an exclusive right to prospect for geothermal resources on the land described in a Notice of Intent or any preference right to a geothermal resources lease.

§ 3209.0-2 Objectives.

The objectives of the regulations in this Subpart 3209 are to encourage exploration of the public lands for geothermal resources in a manner that is consistent with the management policy set forth in § 1725.3 of this chapter. No exploration operations will be allowed if the authorized officer determines that such exploration operations would be inconsistent with that policy. The authorized officer may suspend or terminate exploration operations upon due notice to the operator at any time if he determines that there is non-compliance with the terms and conditions of the notice of intent.

§ 3209.0-5 Definitions.

As used in this subpart:

(a) "Exploration operations" means any activity relating to the search for evidence of geothermal resources which requires physical presence upon public lands and which may result in damage to public lands or resources thereon. It includes, but is not limited to, geophysical operations, drilling of shallow temperature gradient wells, construction of roads and trails, and cross-country transit by vehicle over public lands. It does not include the casual use of public lands for geothermal resources exploration. It does not include core drilling for subsurface geologic information, except drilling of shallow temperature gradient wells, or drilling for geothermal resources; these activities will be authorized only by the issuance of a geothermal resources lease. The regulations in this Subpart, however, are not intended to prevent drilling operations necessary for placing explosive charges for seismic exploration, nor do they affect the exclusive right of a lessee to drill for geothermal resources upon the land subject to his lease.

(b) "Notice of Intent" means a "Notice of Intent and Permit to Conduct Exploration Operations (Geothermal Resources)."

(c) "Public lands" means lands owned by the United States and administered by the Bureau of Land Management, including retained mineral interest in lands, title to which has passed from the United States.

(d) "Casual use" means activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources, and improvements. For example, activities which do not involve use of heavy equipment or explosives and which do not involve vehicle movement except over established roads and trails are "casual use."

§ 3209.1 Notice of intent and permit to conduct exploration operations (Geothermal Resources).

§ 3209.1-1 Application.

(a) *Forms and where filed.* Any persons desiring to conduct exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file for approval with the authorized officer for the district in which the public lands are located a Notice of Intent on a form approved by the Director.

(b) *Requirements.* The Notice of Intent will contain the following:

(1) The name and address, including zip code, both of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities;

(2) A statement that the signers agree that exploration operations will be conducted pursuant to the terms and conditions listed on the approved form;

(3) A brief description of the type of operations which will be undertaken;

(4) A description of the lands to be explored by township;

(5) A map or maps, available from state or Federal sources, showing the lands to be entered or disturbed by the proposed exploration operations; and

(6) The approximate dates of the commencement and termination of exploration operations.

§ 3209.1-2 Review of Notice of Intent.

The authorized officer will either approve or disapprove a Notice of Intent as promptly as practicable, but in any event within 30 calendar days after the date of the filing of the Notice of Intent. If the authorized officer shall disapprove a Notice of Intent, he shall explain in writing to the applicant the reasons for disapproval.

§ 3209.2 Exploration operations.

No exploration operations will be conducted on public lands except pursuant to the terms of a Notice of Intent which has been approved by the authorized officer.

§ 3209.3 Completion of operations.

Upon completion of the exploratory operations, there shall be filed with the authorized officer a "Notice of Completion of Exploration Operations." Within 90 days after the filing of such "Notice of Completion," the authorized officer shall notify the party who had conducted

the operations whether there has been compliance with all of the terms and conditions set out by the regulations in this Subpart and in the Notice of Intent, or whether any additional measures must be taken to rectify any damage to the land, specifying the nature and extent thereof.

§ 3209.4 Bond requirement.

§ 3209.4-1 General.

(a) Simultaneously with the filing of the Notice of Intent, and before the entry is made on the land, the party or parties filing the Notice of Intent must file with the authorized officer a surety company bond for each exploration operation in the amount of not less than \$5,000, conditioned upon the full and faithful compliance with all of the terms and conditions of the regulations in this Subpart and of that Notice of Intent.

(b) A party will be excused from compliance with the requirements of paragraph (a) of this section if he possesses either a nationwide bond in the amount of not less than \$50,000 covering all exploration operations or a statewide bond in the amount of not less than \$25,000 covering all exploration operations in the State in which the lands on which he has filed the "Notice of Intent" are situated.

(c) In addition to the bond required by paragraph (a), before entry is made on the land, the party or parties filing the "Notice of Intent" must furnish and maintain bonds in the amount of not less than \$1,000 for the protection of each owner or holder of surface rights or rights to surface resources.

§ 3209.4-2 Riders to existing bond forms.

Nationwide and statewide bonds. Holders of nationwide and statewide oil and gas exploration bonds shall be permitted, in lieu of furnishing additional bonds other than those required by § 3209.4-1(c), to amend their bonds to include geothermal resources exploration operations.

§ 3209.4-3 Termination of period of liability.

The authorized officer will not give his consent to the cancellation of the bond if an individual bond was submitted or to the termination of the period of liability if a State or nationwide bond was submitted, unless and until there has been compliance with all of the terms and conditions of the Notice of Intent. Should the authorized officer fail to notify the party within 90 days from the filing of "Notice of Completion" that all terms and conditions have been complied with or that additional corrective measures must be taken to rehabilitate the land, the period of liability under an individual bond or the period of liability for a particular exploration operation under a State or nationwide bond shall automatically terminate on the 91st day.

PART 3210—NONCOMPETITIVE LEASES

Subpart 3210—Noncompetitive Leases; General

Sec.

- 3210.1 Availability of land.
- 3210.2-1 Application.
- 3210.2-2 Submission of applications.
- 3210.2-3 Withdrawal of application.
- 3210.2-4 Amendment to lease.
- 3210.3 Determination of priorities.
- 3210.4 Rejections.

Subpart 3211—Bureau Motion, Lands Previously Leased for Geothermal Resources

- 3211.1 Releasing of formerly leased lands.
- 3211.2 Applications during simultaneous filing periods.
- 3211.3 Insurance of leases for unit on posted list.

Subpart 3210—Noncompetitive Leases; General

§ 3210.1 Availability of land.

(a) Applications to lease, except for those filed pursuant to Part 3230, of this chapter, filed prior to the effective date of these regulations are unacceptable and will be returned summarily without earning any priority.

(b) Lands and deposits subject to disposition under this part which are not within any KGRA will be available for leasing after the effective date of these regulations. Lands which are available for noncompetitive leasing and which were included in cancelled, relinquished, expired, or terminated leases shall be available for leasing only subject to the provisions of Subpart 3211. All other lands available for noncompetitive leasing will be available for leasing only subject to the provisions of this Subpart 3210. All applications to lease the same lands which are filed between the effective date of these regulations and 30 days following that time will be considered to have been filed simultaneously, and the respective priority of the various applications will be determined in accordance with § 3210.3. In other respects the first 30 days after the effective date of these regulations shall be treated as an application filing period as provided in § 3210.2-2.

(c) Final action will not be taken on any application filed after the initial 30-day period until final action has been taken on all applications filed during that period.

§ 3210.2-1 Application.

An application for a lease must be filed on a form approved by the Director in the proper BLM office in duplicate for public lands and in triplicate for acquired lands. The application must be submitted in a sealed envelope marked "Application for lease pursuant to 43 CFR 3210". An application will be considered filed when it is received in the proper office during business hours. The application must include the following:

- (a) The applicant's name and address;
- (b) A statement of applicant's citizenship and qualifications;

(c) A complete and accurate description of the lands applied for, which must include all available lands, including reserved geothermal resources, within a surveyed or protracted section;

(d) A proposed plan which shall include: (1) A map, or maps, available from State or Federal sources, showing the topography of the land applied for, on which the applicant shall show drainage patterns, present road and trail locations, present utility systems, proposed road and trail location, proposed well locations and potential surface disturbance, and (2) a narrative statement setting forth his proposed plan and methods for diligent exploration. Such plan shall provide for a program of diligent exploration as defined in § 3203.5 of this subchapter.

The narrative statement shall also describe the measures proposed to be taken to prevent or control fire, soil erosion, pollution of surface and ground water, damage to fish and wildlife or other natural resources, air and noise pollution and hazards to public health and safety during lease activities. However, the proposed plan required by this paragraph need not be submitted with the application during the initial 30-day simultaneous filing period provided by § 3210.1(b) or during any application filing period pursuant to § 3210.2-2, but must be submitted when required by the authorized officer; and

(e) A statement of interest, direct or indirect, in other Federal geothermal leases or applications in the same State. Such total interest may not exceed 20,480 acres.

§ 3210.2-2 Submission of applications.

Except for applications filed during the first 30 days after the effective date of these regulations, applications for leases pursuant to this Part 3210 shall be submitted only during application filing periods. An application filing period shall begin on the first working day of each month and shall end at the close of business on the last working day of that month. The first application filing period shall begin on the first working day of the month following the conclusion of the initial 30 day filing period provided in § 3210.1(b). No applicant shall file during the same application filing period a second application which overlaps any of the land covered by his first application. When an application is filed with the authorized officer, the date and time of filing shall be stamped on the envelope. The envelope containing the application shall remain sealed until the end of the application filing period during which the application is filed. On the first working day following the end of the application filing period all applications shall be opened, and it will be determined which applications are for lands included in a KGRA. In determining whether land included in an application is a KGRA because of competitive interest, no application sub-

mitted during any subsequent application filing period will be considered. Applications for land determined to be KGRA will be rejected. All other applications will be assigned priority according to the date and time of filing. If any application covers both land within a KGRA and land outside a KGRA, the applicant will be granted the opportunity to amend his application to exclude the portion included in a KGRA, and his amended application will be assigned priority according to the date and time of filing of his original application, but must comply with all other requirements of these regulations.

§ 3210.2-3 Withdrawal of application

An application may not be withdrawn, either in whole or in part, unless the request is received by the proper BLM office before the lease or an amendment of the lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States even though the effective date of the lease is subsequent to the date of filing of the withdrawal, except where a separate conflicting lease has been signed on behalf of the United States covering the land described in the withdrawal.

§ 3210.2-4 Amendment to lease.

If any of the land applied for was open to filing when the application was filed but is omitted from the lease for any reason and thereafter becomes available for noncompetitive leasing, the original lease will be amended to include the omitted land unless, before the issuance of the amendment, the proper BLM office receives a withdrawal of the lessee's application with respect to such land or such omitted lands have been determined to be within a KGRA. The lease term for the land added by such an amendment shall be the same as if the land had been included in the original lease when it was issued.

§ 3210.3 Determination of priorities.

(a) No lease shall be issued before final action has been taken on (1) any prior application to lease the land, (2) any subsequent application to lease the land that is based upon a claimed preferential right, and (3) any petition for the renewal or reinstatement of an existing or former lease on the land.

(b) Where a lease is issued before final action has been taken on such applications and petitions, it shall be canceled, and the advance rental returned, after due notice to the lessee, where the applicant or petitioner is found to be qualified and entitled to receive a lease of the land.

(c) Applications for lease received in the mail or delivered on the same day will be deemed to have been simultaneously filed, and the right of priority and the order of processing will be determined by a public drawing.

(d) Prior to the issuance of any lease, a determination shall be made as to whether or not the lands are within a KGRA. Applications for lands determined to be within any KGRA will be rejected.

§ 3210.4 Rejections.

If, after the filing of an application for a noncompetitive lease and before the issuance of a lease, or amendment thereto, pursuant to that application, the land embraced in the application becomes included within a KGRA, the application will be rejected as to such KGRA lands. The authorized officer retains discretion to reject an application for a noncompetitive lease even though the tract for which application is made is not determined to be within a KGRA.

Subpart 3211—Bureau Motion—Land Previously Leased for Geothermal Resources

§ 3211.1 Releasing of formerly leased lands.

Lands available for noncompetitive leasing in canceled or relinquished leases or in leases which expire by operation of law at the end of their primary or extended terms or in leases which terminate by operation of law for nonpayment of rental pursuant to 30 U.S.C. sec. 1004, shall be subject to further leasing only in accordance with the provisions of this section. From time to time the authorized officer will publish in the FEDERAL REGISTER, post in each proper BLM office, and provide appropriate news coverage of:

(a) A list of leasing units composed of lands which are available for noncompetitive leasing and which were in canceled, expired, relinquished, or terminated leases.

(b) An announcement that applications for leases on such lands will be received after a specific hour and date and that any applications filed during a specified simultaneous filing period beginning at that time will be regarded as simultaneously filed;

(c) The address of the proper BLM office where applications must be filed and where the terms and conditions under which the lease will be issued are available; and

(d) Requirements for a complete application, indicating that the proposed plan of operation, as required by § 3210.2-1(d), will not be required until there has been a drawing and a consequent determination of priority, but must be filed before a lease can be issued.

§ 3211.2 Applications during simultaneous filing periods.

(a) An application shall conform to the requirements of 43 CFR 3210.2-1, except as provided below.

(b) Only one complete leasing unit, identified by unit number, may be included in an application. Lands not on the published list may not be included in the application.

(c) An applicant is permitted to file only one application for each numbered unit on the posted list. Submission of more than one application by or on behalf of the applicant for any unit on the posted list will result in the disqualification of all applications submitted by that applicant for the drawing to be held for that particular unit.

(d) The application must be accompanied by a signed statement that the applicant will furnish the information required by these regulations within 15 days after notification that his application is the only one for the tract, or that he is the successful drawee.

(e) Each application filed during a simultaneous filing period must be submitted in a sealed envelope marked "Application for a lease pursuant to 43 CFR subpart 3211". The envelope will remain sealed until the end of the 30-day simultaneous filing period, at which time the application will be time-stamped simultaneously and serialized. A public drawing of all applications received during the simultaneous 30-day period will be held to determine respective priorities and order of processing.

(f) Applications filed during a simultaneous filing period are subject to the classification criteria established in § 3200.0-5(k) and will be considered as all filed the same day.

(g) The requirements of § 3210.2-1(d) need not be satisfied for a complete application during the 30-day simultaneous filing period or during any future designated simultaneous filing period. Such data must be submitted by the successful drawee when requested by the authorized officer.

(h) Each application must be accompanied by the service charge of \$50. The first year's advance rental need not be submitted with the application. A lease will be issued to the first drawee qualified to receive a lease upon payment of the first year's rental. Rental must be received in the proper BLM office within fifteen days from the date of receipt of notice that such rental is due. The drawee failing to submit the rental payment within the time allowed will be automatically disqualified to receive the lease, and consideration will be given to the application of the drawee having the next highest priority in the drawing.

§ 3211.3 Issuance of leases for units on posted list.

(a) If more than one application is received during the simultaneous filing period for the same unit on the list posted pursuant to § 3211.1(a), all applications on that unit filed during that period will be considered simultaneously filed. Priority of filing for such units will be determined by a public drawing. Three applications will be drawn for each unit.

If the lands are determined not to be within any KGRA, a lease may be issued to the successful drawee upon his compliance with all applicable regulations, including those in Subpart 3210 of this part.

(b) If only one application is filed during the simultaneous filing period on a unit on the list posted pursuant to § 3211.1(a), a lease on that unit, if the land is not included within any KGRA, may be issued to the applicant, upon his compliance with all applicable regulations, including those in Subpart 3210 of this part.

(c) If no application is filed on a unit on the list posted pursuant to § 3211.1

(a) within the prescribed simultaneous filing period, the land in that unit, if not with a KGRA, will become available for leasing in accordance with Subpart 3210 of this part.

PART 3220—COMPETITIVE LEASES

Subpart 3220—Competitive Leases; General

Sec.

- 3220.1 General.
- 3220.2 Nominations.
- 3220.3 Publication of notice of lease sale.
- 3220.4 Contents of notice of lease sale.
- 3220.5 Bidding requirements.
- 3220.6 Award of lease.

Subpart 3220—Competitive Leases; General

§ 3220.1 General.

(a) Lands within a KGRA, except as provided under § 3201.1, will be available for leasing on the effective date of these regulations.

(b) The authorized officer will accept nominations to lease, or may on his own motion from time to time call for nominations to lease. Nominations may be withdrawn at any time.

§ 3220.2 Nominations.

(a) Nominations will be submitted on a card approved by the Director.

(b) A nomination must be filed in the proper BLM office in duplicate for public lands and triplicate for acquired lands and must include the following:

- (1) The nominator's name and address;
- (2) A statement of citizenship and qualifications for lease;
- (3) A description of the lands; and
- (4) A statement of the interests, direct or indirect, held in other Federal geothermal leases or applications in the same State.

§ 3220.3 Publication of notice of lease sale.

Where the Secretary determines to offer lands for competitive leasing he will publish a notice of lease sale in a newspaper of general circulation in the area in which the lands to be leased are located once a week for 4 consecutive weeks, or for such other period as he may direct.

§ 3220.4 Contents of notice of lease sale.

The notice will specify the time and place of sale, the manner in which bids may be submitted, the description of the lands, and the terms and conditions of the sale, including royalty and rental rates.

The notice will indicate the proper BLM office where the terms and conditions under which the lease will be issued are available. The notice will also indicate that the proposed plan of operation, as required by § 3210.2-1(d), must be filed before a lease can be issued.

§ 3220.5 Bidding requirements.

(a) A separate identified sealed bid must be submitted for each lease unit. Each bidder must submit with his bid a certified or cashier's check, bank draft,

money order or cash in the amount of one-half of the amount bid together with proof of qualifications as required by these regulations.

(b) All bidders are warned against violation of the provisions of Title 18 U.S.C. section 1860 prohibiting unlawful combination or intimidation of bidders.

§ 3220.6 Award of lease.

(a) All sealed bids shall be opened at the place, date, and hour specified in the notice. No bids will be accepted or rejected at that time.

(b) Leases will be awarded to the highest responsible qualified bidder, except as required under Part 3230.

(c) The right to reject any and all bids is reserved. If the authorized officer fails to accept the highest bid for a lease within 30 days after the date on which the bids are opened (or such longer period as may be needed to comply with § 3230.1-6), all bids for that lease will be considered rejected. Deposits on rejected bids will be returned.

(d) If the lease is awarded, three copies of the lease will be sent to the successful bidder who shall be required to execute them within 30 days from receipt thereof, to pay the first year's rental, the balance of the bonus bid, file the required bond or bonds, and submit the proposed plan of operation as required by § 3210.2-1(d). When the three copies of the lease are executed by the successful bidder and returned to the authorized officer, the lease will be executed by the authorized officer and a copy will be mailed to the successful bidder.

(e) If the successful bidder fails to execute the lease or otherwise comply with the applicable regulations, his deposit will be forfeited and disposed of as provided in section 20 of the Act. In this event the lands will be reoffered when it is determined, in the opinion of the Secretary, that sufficient interest exists to justify a competitive lease sale.

PART 3230—RIGHTS TO CONVERSION TO GEOTHERMAL LEASES OR APPLICATION FOR GEOTHERMAL LEASES

Subpart 3230—Rights to Conversion to Geothermal Leases or Application for Geothermal Leases; General

Sec.

- 3230.1 General.
- 3230.1-1 Rights to conversion to geothermal leases.
- 3230.1-2 Rights to conversion to applications for geothermal leases.
- 3230.1-3 Land in which minerals are reserved to the United States.
- 3230.1-4 Conflicting claims of rights to conversion to geothermal leases, or to applications for geothermal leases.
- 3230.1-5 [Reserved]
- 3230.1-6 Method of leasing to owners of conversion rights to geothermal leases, or to applications for geothermal leases.
- 3230.1-7 Acreage limitation.
- 3230.2 Qualifications.
- 3230.3 Applications.
- 3230.3-1 Filing of application.
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Sec.

- 3230.4 Conversion to geothermal leases or to applications for geothermal leases.
- 3230.4-1 Processing and adjudicating applications.
- 3230.4-2 Approval.

Subpart 3230—Rights to Conversion to Geothermal Leases or Application for Geothermal Leases

§ 3230.1 General.

§ 3230.1-1 Rights to conversion to geothermal leases.

Where lands were on September 7, 1965, subject to valid leases or permits issued under the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181-287), or the Mineral Leasing Act for Acquired Lands, as amended (30 U.S.C. 351-358), or subject to existing mining claims located on or prior to September 7, 1965, the lessees, permittees, or claimants, or their successors in interest, if qualified to hold geothermal leases, shall have the right, subject to certain limitations as hereinafter provided, to convert such leases, permits or claims to geothermal leases covering the same lands.

§ 3230.1-2 Rights to conversion to applications for geothermal leases.

Where lands were subject to application for leases or permits under the mineral leasing laws referred to in § 3230.1-1 on September 7, 1965, the applicants may, subject to certain limitations as hereinafter provided, convert their applications to applications for geothermal leases having priorities dating from the time of filing such applications under said mineral leasing laws.

§ 3230.1-3 Land in which minerals are reserved to the United States.

Where a right to one of the forms of conversion referred to in § 3230.1-1 or § 3230.1-2 is claimed as to lands the surface of which has passed from Federal ownership but in which the minerals have been reserved to the United States, final action on any claim to conversion rights under section 4 of the Act shall be held in abeyance until such time as the question of title to the geothermal resources in such lands has been resolved pursuant to the provisions of section 21(b) of the Act, unless the Secretary determines that it is in the public interest to make a determination of such claims at an earlier time, subject to the rights, if any, of non-Federal owners.

§ 3230.1-4 Conflicting claims of rights to conversion to geothermal leases, or to applications for geothermal leases.

(a) Where there are conflicting claims of rights to conversion to geothermal leases based upon mineral leases, mineral permits, or mining claims embracing the same land, the date of issuance of the permit or lease or of recordation of the claim shall determine priority.

(b) Where there are rights to conversion to applications for geothermal

leases based on applications for mineral leases or permits in conflict with rights to conversion to geothermal leases based upon mining claims embracing the same lands, the date of filing the application or the date of recordation of the mining claim shall determine priority.

§ 3230.1-6 Method of leasing to owners of conversion rights to geothermal leases, or to applications for geothermal leases.

(a) *Lands included within any KGRA*—(1) *Competitive lease.* Where lands have been included within any KGRA prior to the issuance of a lease, the owner of a conversion right to a geothermal lease for such lands shall be entitled to the issuance of a competitive lease only in accordance with the provisions of subparagraph (2) of this paragraph. If the lands subject to a conversion right to a geothermal lease are in part within a KGRA and in part outside a KGRA, the holder of that conversion right shall have the right to divide his conversion right into two separate conversion rights so that he may receive a geothermal lease to the lands within the KGRA only subject to subparagraph (2) of this paragraph and a geothermal lease to the lands not within a KGRA subject to paragraph (b) of this section.

(2) *Preference right.* (i) Lands which have been included within any KGRA shall be leased only by competitive bidding in the manner prescribed in Subpart 3220 of this chapter, except that, in addition, the name and address of the owner of any conversion right to a geothermal lease will be set forth in the lease sale notice.

(ii) The person owning the right to conversion to a geothermal lease shall be informed by written notice of the highest bona fide bid submitted for the lease at the sale. If within thirty (30) days after he has received that written notice, the person owning the right to conversion to a geothermal lease shall inform the authorized officer that he wishes such a lease, pay an amount equal to the highest bona fide bid submitted, pay the rental for the first year, file the required bond or bonds, and submit the data required by § 3210.2-1(d) and (e), a lease will be issued to him.

(iii) Failure of the owner of the right to conversion to a geothermal lease to inform the authorized officer timely will constitute a forfeiture of his conversion rights without further notice to him. In this event, the lease will be offered to the highest bona fide bidder, if otherwise qualified.

(b) *Lands not included within any KGRA—Noncompetitive lease.* Where lands have not been included within any KGRA prior to the issuance of a lease, the owner of a conversion right to a geothermal lease for such lands, if otherwise qualified, shall be entitled to the issuance of a noncompetitive lease for such lands.

(c) *Lands included within a KGRA*—(1) *Application for a lease.* Where lands have been included within a KGRA prior to the issuance of a lease, the owner of a

conversion right to an application for a geothermal lease to those lands shall be entitled to receive a competitive geothermal lease only in accordance with the provisions of Subpart 3220 of this part. If the lands subject to a conversion right to a geothermal application are in part within a KGRA and in part outside a KGRA, the holder of that conversion right may amend his application to cover only the land outside the KGRA.

(2) *Preference right.* The owner of a conversion right to an application for a geothermal lease where the lands have been included within a KGRA shall receive no preference right to meet the highest bona fide bid.

(d) *Lands not included within any KGRA*—(1) *Application for a lease.* Where lands have not been included within a KGRA, the owner of a conversion right to an application for a geothermal lease, if otherwise qualified, shall be entitled to convert his right into an application for a non-competitive lease.

(2) *Preference right.* The owner of a conversion right to an application for a geothermal lease where the lands have not been included within a KGRA, if otherwise qualified, shall be entitled to the issuance of a non-competitive geothermal lease for such lands in accordance with Subpart 3210 of this part.

§ 3230.1-7 Acreage limitation.

No person shall be permitted to obtain, through conversion of mineral leases or prospecting permits, or applications therefor, or mining claims, leases for more than 10,240 acres, or a lease to any land not included in the lease, permit, application or claim converted, except that any such geothermal lease issued may include some lands not embraced in the lease, permit, application or claim on which the conversion right is based, where a metes and bounds description was used to describe lands in issued leases or permits or in filed applications or mining claim locations. In such event, the metes and bounds description will be conformed by the authorized office to a legal subdivision, to the extent possible.

§ 3230.2 Qualifications.

Persons who believe they are qualified under the Act to convert mineral leases or permits or existing mining claims to geothermal leases and persons who believe they are entitled to convert applications for mineral leases and permits to applications for geothermal leases shall comply with the procedures set forth below.

§ 3230.3 Applications.

§ 3230.3-1 Filing of application.

(a) A written application shall have been filed with the proper BLM office on or before June 22, 1971, pursuant to the notice published in the FEDERAL REGISTER of January 15, 1971, 36 FR 623. If such an application has been filed and does not contain the information specified in § 3230.3-2 hereof, such information must be supplied by the applicant

within 60 days of the effective date of these regulations.

(b) Failure to have filed a conversion right application on or before June 22, 1971, will result in the loss of any such rights so claimed.

§ 3230.3-2 Statements required.

(a) An application based on a valid lease or permit referred to in section 3230.1-1 hereof shall include the date of issuance, the State in which the lands are located, and the serial number of the lease or permit. An application based on a mining claim referred to in § 3230.1-1 shall include the name, location, legal description or reference sufficient to identify the lands on the ground, date of location and date and place of recordation of the mining claim (including volume and page), which the applicant seeks to convert to a geothermal lease. An application based on an application for a mineral lease or permit referred to in § 3230.1-1 shall include the date the application for the lease or permit was filed with the Bureau of Land Management and the location of the proper BLM office where the application was filed, and should indicate the serial number assigned to the application.

(b) An application shall include a description of the lands sought to be included in a geothermal lease. If the lands have been surveyed under the public land rectangular survey system, each application shall describe the lands by legal subdivision, section, township, and range. If otherwise officially surveyed, the lands shall be described by the legal description, mining claim survey, or irregular tracts. If the lands have not been so surveyed, but protracted surveys for those lands have been approved and the effective date thereof published in the FEDERAL REGISTER, each application for lands shown on such protracted surveys, filed on or after such effective date, shall describe the lands according to the legal subdivision, section, township, and range shown on the approved protracted surveys. If the lands have not been so surveyed, or included within approved protracted surveys, or it is otherwise appropriate, each application shall describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to a monument or to a prominent topographic feature.

(c) An application shall be accompanied by a detailed statement showing: (1) The expenditures made for the exploration, development, or production of geothermal steam by the applicant on lands for which a geothermal lease is sought or on adjoining, adjacent or nearby Federal or non-Federal lands and the date or dates such expenditures were made, (2) the names and current addresses of the persons who actually performed the aforesaid exploration, development, or production work, (3) the geological, geophysical, and engineering data acquired in such exploration, development, and production which

demonstrates, or tends to demonstrate the expenditures claimed, (4) a map showing the location where the expenditures and improvements were made, (5) a proposed plan as required by § 3210.2-1 (e), and (6) a statement that he will be bound by the terms and conditions of a lease, if issued. The applicant shall file such additional information with respect to the application as requested by the authorized officer.

§ 3230.4 Conversion to geothermal leases or to applications for geothermal leases.

§ 3230.4-1 Processing and adjudicating applications.

Application for conversion to geothermal leases or to applications for geothermal leases together with all information and data submitted or requested by the authorized officer pursuant to § 3230.3-2 hereof and any other pertinent available information or data shall be reviewed by the authorized officer for the purpose of determining whether the required showing has been made, and thereafter the authorized officer shall prepare a proposed determination which shall be submitted to the Secretary.

§ 3230.4-2 Approval.

The authorized officer will make a determination that the applicant has or has not satisfactorily shown that he is entitled to receive the grant of a geothermal lease, or application for a geothermal lease.

PART 3240—RULES GOVERNING LEASES

Subpart 3240—Rules Governing Leases

Subpart 3241—Assignments and Transfers

- Sec.
- 3241.1 Assignments, transfers, interests, qualifications.
 - 3241.1-1 Record title assignments or transfers of leases or undivided lease interests.
 - 3241.1-2 Qualifications.
 - 3241.2 Requirements for filing of assignments or transfers.
 - 3241.2-1 Place of filing and service charge.
 - 3241.2-2 Number of copies required.
 - 3241.2-3 Time of filing assignments, transfers of leases, or undivided lease interests.
 - 3241.2-4 Forms and statements.
 - 3241.2-5 Description of lands.
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 - 3241.5 Continuing responsibility.
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 - 3241.7 Overriding royalty interests.
 - 3241.7-1 General.
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 - 3241.8 Lease account status; requirement.
 - 3241.9 Effect of assignment.

Subpart 3242—Production and Use of Byproducts

- 3242.1 General.
- 3242.2 Production and use of commercially demineralized water as a byproduct, production and use of other sources of water.
- 3242.2-1 General.
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- 3242.2-3 Water wells on geothermal areas.
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Subpart 3243—Cooperative Conservation Provisions

- 3243.1 Cooperative or unit plans.
- 3243.2 Acreage chargeability.
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- 3243.3-1 Approval.
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- 3243.4-1 Approval.
- 3243.4-2 Requirements.
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Subpart 3244—Terminations and Expirations

- 3244.1 Relinquishments.
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- 3244.2-1 General.
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- 3244.3 Termination of lease for noncompliance with regulations or lease terms; notice; hearing.
- 3244.4 Expiration by operation of law.
- 3244.5 Removal of material and supplies upon termination of lease.

Subpart 3241—Assignments and Transfers

§ 3241.1 Assignments, transfers, interests, qualifications.

§ 3241.1-1 Record title assignments or transfers of leases or undivided lease interests.

(a) The record title of leases may be assigned as to all or part of the leased acreage, except that no assignment will be approved where (1) either the assigned or retained portions created by the assignment would be less than 640 acres, unless the total acreage in the lease being partially assigned is less than 1,280 acres occasioned by includes an irregular subdivision, as provided in § 3203.2 of this part, in which case the assigned and retained portions may be less than 640 acres by an amount which is smaller than the amount by which the area would be more than 640 acres if the irregular subdivision were added, or (2) an undivided interest is created by assignment of a lease containing less than 640 acres, or (3) where the lease being assigned contains 640 acres or more, an undivided interest of less than 10 percent would be created in the leased acreage. An exception to the minimum acreage provision of this section may be made by the Secretary where he finds such exception is necessary in the interest of conservation of the resources.

(b) A working interest or operating right may be assigned, in accordance with this section, *Provided* That the assigned interest or right, divided or undivided, vests in the holder only the right to explore, develop and produce geothermal resources from the leased lands to the extent of not less than the interest assigned.

(c) All requests for approval of any assignment will be reviewed, prior to approval, to adjust environmental terms and conditions where necessary.

§ 3241.1-2 Qualifications.

(a) No assignment will be approved (1) if the assignee or any other party in interest is not qualified to take and hold a lease; (2) if a required bond is not filed; or (3) if the statement of interest required under § 3202.2-1(a) is not filed.

(b) an assignment to a minor other than an heir or devisee of a lessee will not be approved.

(c) The assignment must be accompanied by a signed statement by the assignee either (1) that he is the sole party in interest in the assignment, or (2) setting forth the names and qualifications of the other parties holding interests in the lease. Where the assignee is not the sole party in interest, separate statements must be signed by each of the other parties and by the assignee setting forth the nature and extent of the interest of each party and the nature of the agreement between them. These separate statements must be filed in the proper BLM office not later than 15 days after the filing of assignment.

(d) Where an attorney-in-fact or agent signs, on behalf of the assignor or assignee, the instrument of transfer or the application for approval, evidence of the authority of the attorney-in-fact or agent to sign such assignment or application must be furnished to the authorized officer.

(e) In order for the heir or devisee of the deceased holder of a lease, an operating agreement, or an overriding royalty interest in a producing lease, to be recognized by the authorized officer as the holder of that lease, agreement or interest, the appropriate showing required under the regulations in § 3202.2-6 must be furnished to the authorized officer.

§ 3241.2 Requirements for filing of assignments or transfers.

§ 3241.2-1 Place of filing and service charge.

A request for approval of any assignment or other instrument of transfer of a lease or interest therein must be filed in the proper BLM office and accompanied by a nonrefundable service charge of \$50. An application request not accompanied by payment of such a service charge will not be accepted for filing.

§ 3241.2-2 Number of copies required.

Three copies of all instruments of assignment or transfer, and a single copy of any additional information required by § 3202.2. Relating to citizenship or qualifications of corporations must be filed in the proper BLM office.

§ 3241.2-3 Time of filing assignments, transfers of leases, or undivided lease interests.

(a) Any instrument of transfer of a lease or of an interest therein, including an assignment of working interests, operating agreements, and operating rights, must be filed in the proper BLM office for approval within 90 days from the date of execution of that instru-

ment and must contain all of the terms and conditions agreed upon by the parties thereto, together with evidence and statements similar to that required of an applicant under these regulations in this group.

(b) A separate instrument of assignment must be filed in the proper BLM office for each geothermal lease involving transfers of record title. When transfers to the same person, association, including partnerships, or corporation involve more than one geothermal lease, one request for approval and one showing as to the qualifications of the assignee will be sufficient.

§ 3241.2-4 Forms and statements.

A form approved by the Director, or unofficial copies of that form in current use, must be used for transfers and requests for approval referred to in this section and must be filed in duplicate for public lands and in triplicate where acquired lands are involved. The approved form may be used for an assignment which affects a transfer of the record title to all or part of a geothermal lease, but it is not to be used for any other type of transfer. The application for assignment shall be deemed to be approved upon execution by the authorized officer.

§ 3241.2-5 Description of lands.

Each instrument of transfer must describe the lands involved in the same manner as described in the lease.

§ 3241.3 Bonds.

Where an assignment does not create separate leases, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. Any assignment which does not convey the assignor's record title in all of the lands in the lease must also be accompanied by consent of his surety to remain bound under the bond of record as to the lease retained by said assignor, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a nationwide or statewide bond, no additional showing by such party is necessary as to the bond requirement.

§ 3241.4 Approval.

Upon approval, an assignment shall be effective as of the first day of the lease month following the date of filing of the assignment required by this Subpart in the proper BLM office.

§ 3241.5 Continuing responsibility.

(a) The assignor and his surety will continue to be responsible for the performance of any obligation under the lease until the assignment is approved.

(b) Upon approval, the assignee and his surety shall be responsible for the performance of all lease obligations notwithstanding any terms in the assignment to the contrary.

§ 3241.6 Production payments.

If payments out of production are reserved, a statement must be submitted

stating the details as to the amount, method of payment, and other pertinent items.

§ 3241.7 Overriding royalty interests.

§ 3241.7-1 General.

(a) Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations.

(b) If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed in the proper BLM office describing the interest.

(c) Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a citizen of the United States, an association of such citizens, or a corporation organized under the laws of the United States or of one of the States or the District of Columbia, and that his interests in geothermal leases do not exceed the acreage limitations provided in these regulations.

(d) All assignments of overriding royalty interests must be filed for record in the proper BLM office within 90 days from the date of execution. Such interests will not receive formal approval.

§ 3241.7-2 Limitation of overriding royalties.

(a) Except as herein provided, an overriding royalty on the value of the output of all geothermal resources, or any of them, at the point of shipment to market may be created by assignment or otherwise: *Provided, That*, (1) the overriding royalty is not for less than one-fourth ($\frac{1}{4}$) of 1 percent of the value of such output, and does not exceed 50 percent of the rate of royalty due to the United States as specified in the geothermal lease, or as reduced pursuant to such lease, and (2) the overriding royalty, when added to overriding royalties previously created, does not exceed the maximum rate established herein.

(b) The creation of an overriding royalty interest that does not conform to the requirements of paragraph (a) of this section shall be deemed a violation of the lease terms, unless the agreement creating overriding royalties provides (1) for a prorated reduction of all overriding royalties so that the aggregate rate of royalties does not exceed the maximum rate established in paragraph (a) of this section and (2) for the suspension of an overriding royalty during any period when the royalties due to the United States have been suspended pursuant to the terms of the geothermal lease.

§ 3241.8 Lease account status; requirements.

Unless the lease account is in good financial standing as to the area covered by an assignment at the time the assignment and bond are filed, or is placed in good standing before the assignment is reached for action, the request for approval of the assignment will be denied, and the lease shall be subject to termination in accordance with these regulations.

§ 3241.9 Effect of assignment.

An assignment of the record title of the complete interest in a portion of the lands in a lease shall segregate the assigned and retained portions into separate and distinct leases. An assignment of an undivided interest in the entire leasehold shall not segregate the lease into separate or distinct leases.

Subpart 3242—Production and Use of Byproducts

§ 3242.1 General.

Where the Supervisor determines that production, use, or conversion of geothermal steam under a geothermal lease is susceptible of producing a valuable byproduct or byproducts, including commercially demineralized water contained in or derived from such geothermal steam for beneficial use in accordance with applicable State water laws, the authorized officer shall require substantial beneficial production or use thereof, except where he determines that:

(a) Beneficial production or use is not in the interest of conservation of natural resources;

(b) Beneficial production or use would not be economically feasible; or

(c) Beneficial production and use should not be required for other reasons satisfactory to him.

§ 3242.2 Production and use of commercially demineralized water as a byproduct, production, and use of other sources of water.

§ 3242.2-1 General.

Except as provided in these regulations, or the lease, the lessee shall have the right to process fluids, including brine, condensate, and other fluids, which are associated with geothermal steam within lands subject to the geothermal lease for the purpose of developing, producing, and utilizing the commercially demineralized water recovered as a result of such processing.

§ 3242.2-2 Prohibition on production of commercially demineralized water.

The lessee shall not be authorized to engage in the primary production of commercially demineralized water from the produced fluids contained in or derived from geothermal steam referred to in § 3243.3-1, where such use would result in the undue waste of geothermal energy.

§ 3242.2-3 Water wells on geothermal areas.

All leases issued under these regulations shall be subject to the condition that, where the lessee finds only potable water in any well drilled for production of geothermal resources, the Secretary may, when the water is of such quality and quantity as to be valuable and useable for agricultural, domestic, or other purpose, acquire the well with casing installed in the well at the fair market value of the casing.

§ 3242.2-4 State water laws.

Nothing in these regulations shall constitute an express or implied claim or

denial on the part of the Federal Government as to its exemption from State water laws.

Subpart 3243—Cooperative Conservation Provisions

§ 3243.1 Cooperative or unit plans.

For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees and their representatives may unite with each other or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any geothermal resource area, or any part thereof (whether or not any part of that geothermal resource area is then subject to any cooperative or unit plan of development or operation). Applications to unitize shall be filed with the Supervisor who shall certify whether such plan is necessary or advisable in the public interest. The procedure in obtaining approval of a cooperative or unit plan of development, the provisions for the supervision of the cooperative or unit plan, and a suggested text of an agreement, are contained in 30 CFR Part 271.

§ 3243.2 Acreage chargeability.

All leases committed to any unit or cooperative plan approved or prescribed by the Supervisor shall be excepted in determining holdings or control for purposes of acreage chargeability. For the extension of leases committed to a unit plan, see Subpart 3203 of this part.

§ 3243.3 Communitization or drilling agreements.

§ 3243.3-1 Approval.

(a) The Supervisor is authorized, when separate tracts under lease cannot be independently developed and operated in conformity with an established well-spacing or well-development program, to approve, or to require lessees to enter into, communitization or drilling agreements providing for the apportionment of production or royalties among the separate tracts of land comprising the drilling or spacing unit for the lease, or any portion thereof, with other lands, whether or not owned by the United States, when in the public interest. Operations or production pursuant to such an agreement shall be deemed to be operations or production as to each lease committed thereto.

(b) Preliminary requests to communitize separate tracts shall be filed in triplicate with the Supervisor.

(c) Executed agreements shall be submitted to the Supervisor in sufficient number to permit retention of five copies after approval.

§ 3243.3-2 Requirements.

The agreement shall describe the separate tracts comprising the drilling or spacing unit, disclose the apportionment of the production or royalties to the several parties and the name of the operator, and shall contain adequate provisions

for the protection of the interests of all parties, including the United States. The agreement must be signed by or in behalf of all interested necessary parties and will be effective only after approval by the Supervisor.

§ 3243.4 Operating, drilling, development contracts or a combination for joint operations.

§ 3243.4-1 Approval.

(a) The Secretary may on such conditions as he may prescribe, approve operating, drilling, or development contracts made by one or more geothermal lessees, with one or more persons, associations, including partnerships, or corporation whenever he shall determine that such contracts are required for the conservation of natural resources or in the best interest of the United States.

(c) Contracts submitted for approval under this section should be filed with the Supervisor together with enough copies to permit retention of five copies after approval.

(d) The authority of the Secretary to approve operating, drilling, or development contracts without regard to acreage limitations ordinarily will be exercised only to permit operators to enter into contracts with a number of lessees sufficient to justify operations on a large scale for the discovery, development, production, or transmission, transportation, or utilization of geothermal resources, and to finance the same.

§ 3243.4-2 Requirements.

(a) The contract must be accompanied by a statement showing all the interests held by the contractor in the area or field and the proposed or agreed plan of operation or development of the field. All the contracts held by the same contractor in the area or field should be submitted for approval at the same time, and full disclosure of the project made. Complete details must be furnished in order that the Secretary may have facts upon which to make a definite determination in accordance herewith and to prescribe the conditions on which approval of the contracts shall be made.

(b) The application must show a reasonable need for the contract and that it will not result in any concentration of control over the production or sale of geothermal resources which would be inconsistent with the antimonopoly provisions of law.

§ 3243.4-3 Acreage chargeability.

All leases operated under approved operating, drilling or development contracts or a combination-for-joint-operations-and-interests-thereunder, shall be excepted in determining holdings or control for purposes of acreage chargeability.

Subpart 3244—Terminations and Expirations

§ 3244.1 Relinquishments.

(a) A lease, or any legal subdivision of the area covered by such lease, may be surrendered by the record title holder by filing a written relinquishment in triplicate

in the proper BLM office, provided the partial relinquishment does not reduce the remaining acreage in the lease to less than 640 acres, except where a departure is occasioned by an irregular subdivision in which case the remaining leased acreage may be less than 640 acres by an amount which is smaller than the amount by which the area would be more than 640 acres if the irregular subdivision were added, and except that the minimum acreage provision of this section may be waived by the Secretary where he finds such exception is justified on the basis of exploratory and development data derived from activity on the leasehold. The relinquishment must: (1) describe the lands to be relinquished as described in the lease; (2) include a statement as to whether the relinquished lands had been disturbed and if so whether they were restored as prescribed by the terms of the lease; (3) state whether wells had been drilled on the lands and if so whether they had been placed in condition for abandonment; and (4) furnish a statement that all moneys due and payable to workmen employed on the leased premises have been paid.

(b) A relinquishment shall take effect on the date it is filed, subject to the continued obligation of the lessee and his surety: (1) To make payments of all accrued rentals and royalties; (2) to place all wells on the land to be relinquished in condition for suspension of operations or abandonment; (3) to restore the surface resources in accordance with all regulations and the terms of the lease; and (4) to comply with all other environmental stipulations provided for by such regulations or lease. A statement must be furnished that all moneys due and payable to workmen employed on the leased premises have been paid.

§ 3244.2 Automatic terminations and reinstatements.

§ 3244.2-1 General.

Except as provided in § 3245.2-2 any lease will automatically terminate by operation of law if the lessee fails to pay the rental on or before the anniversary date of such lease. However, if the time for payment falls upon any day in which the proper office to receive payment is not open, payment received on the next official working day shall be deemed to be timely. The termination of the lease for failure to pay the rental must be noted on the official records of the proper BLM office. Upon such notation the lands included in such lease will become subject to leasing as provided for in Subpart 3211 of this part.

§ 3244.2-2 Exceptions.

(a) *Nominal deficiency.* If the rental payment due under a lease is paid on or before its anniversary date but the amount of the payment is deficient and the deficiency is nominal, the lease shall not have automatically terminated unless the lessee fails to pay the deficiency within the period prescribed in a Notice of Deficiency, or by the due date, whichever is later. A deficiency is nominal if

it is not more than \$10 or one percentum (1%) of the total payment due, whichever is more. The authorized officer shall send a Notice of Deficiency to the lessee on an approved form. The Notice shall be sent by certified mail, return receipt requested, and shall allow the lessee 15 days from the date of receipt to submit the full balance due to the proper BLM office. If the payment called for in the notice is not made within the time allowed, the lease will have terminated by operation of law as of its anniversary date.

(b) *Reinstatements.* (1) Except as hereinafter provided, the authorized officer may reinstate a lease which has terminated automatically for failure to pay the full amount of rental due on or before the anniversary date, if it is shown to his satisfaction that such failure was either justifiable or not due to a lack of reasonable diligence on the part of the lessee; and a petition for reinstatement, together with the required rental, including any back rental which has accrued from the date of termination of the lease, is filed with the proper BLM office.

(2) The burden of showing that the failure to pay on or before the anniversary date was justifiable or not due to lack of reasonable diligence will be on the lessee. Reasonable diligence normally requires sending or delivering payments sufficiently in advance of the anniversary date to account for normal delays in the collection, transmittal, and delivery of the payment. The authorized officer may require evidence, such as post office receipts, of the time of sending or delivery of payments.

(3) Under no conditions will a lease be reinstated if (i) a valid lease has been issued prior to the filing of a petition for reinstatement affecting any of the lands covered by the terminated lease, or (ii) the interest in the lands has been withdrawn, disposed of, or has otherwise become unavailable for leasing. However, the authorized officer will not issue a new lease for lands covered by a lease which terminated automatically until 90 days after the date of termination.

(4) Reinstatement of terminated leases is discretionary with the Secretary. The basic criterion in accordance with which this discretion will be exercised is whether the Secretary would be willing to issue a lease if a new lease offer for the same land were under consideration.

§ 3244.3 Termination of lease for non-compliance with regulations or lease terms; notice; hearing.

A lease may be terminated by the authorized officer for any violation of these regulations, the regulations in 30 CFR Part 270, or the lease terms, 30 days after receipt by the lessee of notice from the authorized officer of the violation, unless (a) the violation has been corrected, or (b) the violation is one that cannot be corrected within the notice period and the lessee has in good faith commenced within the notice period to correct the

violation and thereafter proceeds diligently to complete the correction. A lessee shall be entitled to a hearing on the matter of any such claimed violation or proposed termination of lease if a request for a hearing is made to the authorized officer within the 30-day period after notice. The procedures with respect to notice of such hearing and the conduct thereof, and with respect to appeals from decisions of hearing examiners upon such hearings, shall follow insofar as practicable the procedural rules applicable to hearings and appeals in public lands cases within the jurisdiction of the Board of Land Appeals, Office of Hearings and Appeals, contained in Department Hearings and Appeals Procedures, Part 4 of this title. The period for correction of violation or commencement to correct a violation of regulations or of lease terms, as aforesaid, shall be extended to 30 days after the lessee's receipt of the hearing examiner's decision upon such a hearing if the hearing examiner shall find that a violation exists.

§ 3244.4 Expiration by operation of law.

Any lease for land on which, or for which under an approved cooperative or unit plan of development or operation, there is no production in commercial quantities, or a producing well, or actual drilling operations being diligently prosecuted, will expire at the end of its primary term without notice to the lessee. Notation of such expiration need not be made on the official records, but the lands previously covered by that expired lease will be subject to the filing of new applications or nominations for leases only as provided in these regulations.

§ 3244.5 Removal of materials and supplies upon termination of lease.

Upon the expiration of the lease, or the earlier termination thereof pursuant to this subpart, the lessee shall have the privilege at any time within a period of ninety (90) days thereafter of removing from the premises any materials, tools, appliances, machinery, structures, and equipment other than improvements needed for producing wells. Any materials, tools, appliances, machinery, structures, and equipment subject to removal, but not removed within the 90-day period, or any extension thereof that may be granted because of adverse climatic conditions during that period, shall, at the option of the Supervisor, become property of the lessor, but the lessee shall remove any or all such property where so directed by the lessor.

Dated July 18, 1973.

WILLIAM W. LYON,
Deputy Under Secretary
of the Interior.

[FR Doc.73-15059 Filed 7-20-73;8:45 am]

Proposed Rules

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rulemaking prior to the adoption of the final rules.

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[43 CFR Parts 3000, 3200]

GEOTHERMAL RESOURCES

Leasing on Public, Acquired, and Withdrawn Lands; Correction and Extension of Comment Period

The purpose of this notice is to correct the inadvertent omission of § 3230.1-5 from the proposed geothermal regulations published in the FEDERAL REGISTER on July 23, 1973 (38 FR 19748). Section 3230.1-5 sets forth evidence requirements for qualifying to convert claimed geothermal rights to geothermal leases. In addition, this notice clarifies the proposed regulations by correcting several lesser errors.

The time for submission of written comments, suggestions, or objections, with respect to 43 CFR, Parts 3000 and 3200, proposed July 23, 1973, and § 3230.1-5 appearing below, to the Geothermal Coordinator, Department of the Interior, Washington, D.C. 20240, is hereby extended from August 22, 1973 to September 5, 1973.

1. A new § 3230.1-5 is added to Subpart 3230 of the proposed regulations to read:

§ 3230.1-5 Evidence required to qualify for grant of rights to conversion to geothermal leases, or to applications for geothermal leases.

(a) Any person claiming rights to conversion to a geothermal lease must show to the reasonable satisfaction of the authorized officer that substantial expenditures for the exploration, development or production of geothermal steam were made by the applicant who is seeking the conversion on the lands for which a lease is sought or on adjoining, adjacent or nearby lands, including both Federal and non-Federal lands. The substantial expenditures must have been made prior to December 24, 1970, and either by the applicant seeking conversion or by his predecessors in interest.

(b) For purposes of these regulations, an application for a lease or a permit, filed pursuant to applicable mineral leasing acts, pending on September 7, 1965, which subsequently ripened into a lease or permit, and which remains outstanding or has either terminated, expired or been canceled or relinquished, retains the right to conversion to an application for a geothermal lease. Applications for a lease or permit, filed pursuant to applicable mineral leasing acts, pending on

September 7, 1965, which were subsequently withdrawn, retain the right to conversion to an application for a geothermal lease. Leases or permits issued pursuant to the applicable mineral leasing acts and outstanding on September 7, 1965, which were subsequently terminated, expired, or were canceled or relinquished, retain the right to conversion to a geothermal lease.

2. Section 3203.3 is corrected to read:

§ 3203.3 Consolidation of leases.

Two or more contiguous leases issued to the same lessee may be consolidated if the total combined acreage does not exceed 2,560 acres, except where a larger acreage is caused by an irregular subdivision or subdivisions as stated in 3203.2.

§ 3241.1-1 [Corrected]

3. Section 3241.1-1 is corrected by deleting "is less than 1,280 acres occasioned by" from paragraph (a)(1).

4. Section 3241.2-2 is corrected to read:

§ 3241.2-2 Number of copies required.

Three copies of all instruments of assignment or transfer, and a single copy of any additional information required by § 3202 of these regulations relating to citizenship or qualifications of corporations and associations, including partnerships, must be filed in the proper BLM Office.

5. Section 3243.4-1 is corrected by: Adding the letter "s" to corporation in paragraph (a); relettering paragraphs (c) and (d) as (b) and (c) respectively.

Dated: August 3, 1973.

W. W. LYONS,
Deputy Under Secretary
of the Interior.

[FR Doc.73-16335 Filed 8-7-73;8:45 am]

APPENDIX B

July 23, 1973, Proposed Regulations for Operations on Public, Acquired and Withdrawn Lands and Geothermal Resources Unit Plan Regulations

- 1.1.1. Purpose and authority.
- 1.1.2. Authority.
- 1.1.3. Purpose and authority.
- 1.1.4. Authority.
- 1.1.5. Purpose and authority.
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- 1.1.100. Authority.

Geological Survey

[30 CFR Parts 270, 271]

GEOHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED AND WITHDRAWN LANDS AND GEOHERMAL RESOURCES UNIT PLAN REGULATIONS (including suggested forms)

Notice of Proposed Rulemaking

The purpose of this revision in the proposed rulemaking for implementing the Geothermal Steam Act of December 24, 1970 (30 U.S.C. 1001-1025), is to provide the public with revisions planned as a result of the public hearings and comments received on the Draft Environmental Statement and previously published proposed rulemaking on operations and units (36 F.R. 13722, 8994, and 37 FR 25300). The Act provides for the leasing of public lands for the purpose of geothermal resource exploration, development and production. The changes in these regulations, since the last publication on November 29, 1972, are primarily administrative and procedural in nature and the environmental impact of these regulations is not believed to be significantly different from the impact of the regulations previously published.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rulemaking process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, D.C. 20240, within 30 days of the date of publication of this notice in the **FEDERAL REGISTER**.

A Final Environmental Statement will be issued in accordance with the provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)) prior to promulgation of any operating and unit regulations.

PART 270—GEOHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED, AND WITHDRAWN LANDS

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GENERAL PROVISIONS

§ 270.1 Purpose and authority.

The Geothermal Steam Act enacted on December 24, 1970 (84 Stat. 1566) referred to in this part as "the Act", authorizes the Secretary of the Interior to prescribe rules and regulations applicable to operations conducted under a lease granted pursuant to that Act, and for the development and conservation of geothermal steam and associated geothermal resources, the prevention of waste, the protection of the public interest, and the protection of water quality, and other environmental qualities. The regulations in this part shall be administered by the Director through the Chief, Conservation Division, or his duly appointed representative.

§ 270.2 Definitions.

As used in the regulations in this part, the term:

(a) "Secretary" means the Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(b) "Director" means the Director of the Geological Survey.

(c) "Supervisor" means a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such a representative acting under his direction.

(d) "Geothermal lease" means a lease issued under 43 CFR Group 3200.

(e) "Lessee" means the individual, corporation, association, or municipality to which a geothermal lease has been issued and its successor in interest or assignee. It also means any agent of the lessee or an operator holding authority by or through the lessee.

(f) "Operator" means the individual, corporation, or association having control or management of operations on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee, or holder of rights under an approved operating agreement.

(g) "Geothermal resources" means (1) all products of geothermal processes, embracing indigenous steam, hot water, and hot brines; (2) steam and other gases, hot water, and hot brines, resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated energy found in geothermal formations; and (4) any byproduct derived therefrom.

(h) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium), which are found in solution or developed in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(i) "Participating area" means that part of the unit area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(j) "Waste" means (1) physical waste, as that term is generally understood; (2) waste of reservoir energy through inefficiency, improper use of or unnecessary dissipation of reservoir energy; (3) the location, spacing, drilling, equipping, operating, or producing of any geothermal well or wells in a manner which causes or tends to cause reduction in the quantity of geothermal energy ultimately recoverable from a reservoir under prudent and workmanlike operations or which tends to cause unnecessary or excessive surface or subsurface loss or destruction of geothermal energy; and (4) the inefficient transmission of geothermal energy from

the source (wellhead) to point of utilization.

(k) "Directionally drilled well" means the deviation of a well bore from the vertical or from its normal course in an intended predetermined direction or course with respect to the points of the compass. Directionally drilled well shall not include a well deviated for the purpose of straightening a hole that has become crooked in the normal course of drilling or holes deviated at random without regard to compass direction in an attempt to sidetrack a portion of the hole on account of mechanical difficulty in drilling.

(l) "Geothermal resources operational order" or "GRO order" means a formal numbered order, issued by the Supervisor, with the prior approval of the Chief, Conservation Division, Geological Survey, which implements the regulations in this part and applies to operations in an area, region, or any significant portion thereof.

(m) "Producible well" means a well which is capable of producing geothermal resources in commercial quantities.

(n) "Commercial quantities" means quantities sufficient to pay a profit after all costs of production have been met.

(o) "Area of operations" means that area of the leased lands which is required for exploration, development, and producing operations, and which is delineated on a map or plat which is made a part of the approved plan of operations. It encompasses the area generally needed for wells, flow lines, separators, surge tanks, drill pads, mud pits, workshops, and other such facilities used for on-project geothermal resources field exploration, development, and production operations.

JURISDICTION AND FUNCTIONS OF SUPERVISOR

§ 270.10 Jurisdiction.

Drilling and production operations, handling and measurement of production, determination and collection of royalty and, in general, all operations conducted on a geothermal lease are subject to the regulations in this part and the applicable regulations contained in 43 CFR Group 3200, and are under the jurisdiction of the Supervisor for the region in which the leased land is situated, subject to the supervisory authority of the Secretary and the Director.

§ 270.11 General functions.

The Supervisor is authorized and directed to carry out the provisions of this part. He will require compliance with the terms of geothermal leases, with the regulations in this part and the applicable regulations in 43 CFR Group 3200, and with the applicable statutes. He shall act on all applications, requests, and notices required in this part. In executing his functions under this part the Supervisor shall ensure that all operations, within the area of operations, will conform to the best practice and are conducted in such manner as

to protect the deposits of the leased lands and to result in the maximum ultimate recovery of geothermal resources, with minimum waste, and are consistent with the principles of the use of the land for other purposes and of the protection of the environment. Inasmuch as conditions in one area may vary widely from conditions in another area, the regulations in this part are intended to be general in nature. Detailed procedures hereunder in any particular area will be covered by GRO orders. The requirements to be set forth in GRO orders relating to surface resources or uses will be coordinated with the appropriate land management agency. The Supervisor may issue oral orders to govern lease operations, but such orders shall be confirmed in writing by the Supervisor as promptly as possible. The Supervisor may issue other orders and rules to govern the development and method for production of a deposit, field, or area. Prior to the issuance of GRO orders and other orders and rules and the approval of any plan of operations or any plan of development, the Supervisor shall, as appropriate, consult with, and receive comments from Federal and State agencies, lessees, operators, or interested parties. Before permitting other operations on the leased land, the Supervisor shall determine if the lease is in good standing, whether the lessee is authorized to conduct operations, has filed an acceptable bond, and has an approved plan of operations.

§ 270.12 Regulation of operations.

The Supervisor shall inspect and supervise operations performed under the regulations in this part to: (a) Prevent waste and damage to formations or deposits containing geothermal resources; (b) prevent unnecessary damage to other natural resources; (c) prevent degradation of the water quality; (d) protect air quality, water quality, and other environmental qualities; and (e) prevent injury to life or property. The Supervisor shall issue such GRO orders as are necessary to accomplish these purposes.

§ 270.13 Required samples, tests, and surveys.

When necessary or advisable, the Supervisor shall require that adequate samples be taken and tests or surveys be made using acceptable techniques, without cost to the lessor, to determine the identity and character of formations; the presence of geothermal resources, water, or reservoir energy; the quantity and quality of geothermal resources, water or reservoir energy; the amount and direction of deviation of any well from the vertical; formation, casing, and tubing pressures, temperatures, rate of heat and fluid flow, and whether operations are conducted in a manner looking to the protection of the interests of the lessor.

§ 270.14 Drilling and abandonment of wells.

The Supervisor shall require that drilling be conducted in accordance with

the terms of the lease, GRO orders, and the regulations in this part and 43 CFR Group 3200; and shall require plugging and abandonment of any well or wells no longer necessary for operations in accordance with plans approved or prescribed by him. Upon the failure of a lessee to comply with any requirement under this section, the Supervisor is authorized to perform the work at the expense of the lessee and the surety.

§ 270.15 Well spacing and well casing.

The Supervisor shall approve proposed well-spacing and well-casing programs or prescribe such modifications to the programs as he determines necessary for proper development, giving consideration to such factors as: (a) Topographic characteristics of the area; (b) hydrologic, geologic and reservoir characteristics of the field; (c) the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use; (d) protection of correlative rights; (e) minimizing well interference; (f) unreasonable interference with multiple use of lands; and (g) protection of the environment, including ground water quality.

§ 270.16 Values and payment for losses.

The Supervisor shall determine the value of production accruing to the lessor where there is loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the lessor as reimbursement for such loss. Payment for such losses will be paid when billed.

§ 270.17 Suspension of operations and production.

(a) On receipt of an application filed in accordance with 43 CFR 3205.3-8 for suspension of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease), the Supervisor may, if he deems the suspension or relief warranted, approve the application.

(b) In the interest of conservation, the Supervisor may, on his own motion, suspend operations or production, or both, on any geothermal lease.

(c) Where operations or production, or both, under a lease, have been suspended, the Supervisor may approve resumption of operations or production either on his own motion or upon written request by the lessee or his agent.

(d) Whenever it appears from facts adduced by or furnished to the Supervisor that the interest of the lessor requires additional drilling or producing operations, he may, by written notice, order the beginning or resumption of such operations.

(e) Any action of the Supervisor under this Section shall be subject to the right of appeal under § 270.90.

(f) See 43 CFR 3205.3-7 and 3205.3-8 for regulations concerning requests to waive, suspend, or reduce payments of rental or royalty, and extensions of leases on which operations or production have been suspended.

REQUIREMENTS FOR LESSEES

(INCLUDING OPERATORS)

§ 270.30 Lease terms, regulations, waste, damage, and safety.

(a) The lessee shall comply with the lease terms, lease stipulations, applicable laws and regulations and any amendments thereof, GRO orders, and other written or oral orders of the Supervisor. All oral orders (to be confirmed in writing as provided in § 270.11) are effective when issued unless otherwise specified.

(b) The lessee shall take all reasonable precautions to prevent: (1) Waste; (2) damage to any natural resource including trees and other vegetation, fish and wildlife and their habitat; (3) injury or damage to persons, real or personal property; and (4) any environmental pollution or damage.

(c) Any significant effect on the environment created by the lessee's operations or failure to comply with environmental standards shall be reported to the Supervisor within 24 hours and confirmed in writing within 30 days.

§ 270.31 Designation of operator or agent.

In all cases where operations are not conducted by the lessee but are to be conducted under authority of an unapproved operating agreement, assignment or other arrangement, a "designation of operator" shall be submitted to the Supervisor, in a manner and form approved by him, prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under the regulations in this part. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Supervisor.

§ 270.32 Local agent.

When required by the Supervisor, the lessee shall designate a local representative empowered to receive notices and comply with orders of the Supervisor issued pursuant to the regulations in this part.

§ 270.33 Drilling and producing obligations.

(a) The lessee shall diligently drill and produce such wells as are necessary to protect the lessor from loss by reason of production on other properties, or in lieu thereof, with the consent of the Supervisor, shall pay a sum determined by the Supervisor as adequate to compensate the lessor for failure to drill and produce any such well.

(b) The lessee shall promptly drill and produce such other wells as the Supervisor may require in order that the lease be developed and produced in accordance with good operating practices. (See 43 CFR 3204.5.)

§ 270.34 Plan of operation.

Prior to commencing any operations on the leased lands or on any lands covered by a unit or cooperative agreement, the lessee shall submit and obtain the approval of the Supervisor and the ap-

propriate land management agency of a plan of operation for the area. Such plan shall include:

(a) The proposed location of each well including a layout showing the position of the mud tanks, reserve pits, cooling towers, pipe racks, etc.;

(b) Existing and planned access and lateral roads;

(c) Location and source of water supply and road building material;

(d) Location of camp sites, air-strips, and other supporting facilities;

(e) Methods for disposing of waste material; and for protection of the environment;

(f) All pertinent information or data which the Supervisor may require to support the plan of operations for the utilization of geothermal resources and the protection of the environment.

(g) Provisions for monitoring deemed necessary by the Supervisor to ensure compliance with these regulations for the operations under the plan; and

(h) A requirement for the collection of data concerning the existing air and water quality, noise, seismic and land subsidence activities, and ecological system of the leased lands for at least one year prior to the submission of a plan for production.

§ 270.35 Subsequent well operations.

After completion of all operations authorized under any previously approved notice or plan, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Supervisor in writing a new plan of operations and has received written approval from him. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Supervisor, but in such cases the lessee shall report his action to the Supervisor as soon as possible.

§ 270.36 Well designations.

The lessee shall mark each derrick upon commencement of drilling operations and each producing or suspended well in a conspicuous place with his name or the name of the operator, the serial number of the lease, the number and location of the well. Whenever possible, the well location shall be described by section or tract, township, range, and by quarter-quarter section or lot. The lessee shall take all necessary means and precautions to preserve these markings.

§ 270.37 Well records.

(a) The lessee shall keep for each well at his field headquarters or at other locations conveniently available to the Supervisor, accurate and complete records of all well operations including production, drilling, logging, directional well surveys, casing, perforation, safety devices, redrilling, deepening, repairing, cementing, alterations to casing, plugging, and abandoning. The records shall

contain a description of any unusual malfunction, condition or problem; all the formations penetrated; the content and character of mineral deposits and water in each formation; thermal gradients, temperatures, pressures, analyses of geothermal waters, the kind, weight, size, grade, and setting depth of casing; and any other pertinent information.

(b) The lessee shall, within 30 days after completion of any well, transmit to the Supervisor copies of the records of all operations in a form prescribed by the Supervisor.

(c) Upon request of the Supervisor, the lessee will furnish (1) legible, exact copies of service company reports on cementing, perforating, acidizing, analyses of cores, electrical, and temperature logs, chemical analyses of steam and waters, or other similar services; (2) other reports and records of operations in the manner and form prescribed by the Supervisor.

§ 270.38 Samples, tests, and surveys.

(a) The lessee, when required by the Supervisor, will make adequate sampling, tests and/or surveys using acceptable techniques, to determine the presence, quantity, quality, and potential of geothermal resources, mineral deposits, or water; the amount and direction of deviation of any well from the vertical; and/or formation temperatures and pressures, casing, tubing, or other pressures and such other facts as the Supervisor may require. Such tests or surveys shall be made without cost to the lessor.

(b) The lessee shall, without cost to the lessor, take such formation samples or cores to determine the identity and character of any formation as are required and prescribed by the Supervisor.

§ 270.39 Directional survey.

The Supervisor may require an angular deviation and directional survey to be made of the finished hole of each directionally drilled well. The survey shall be made at the risk and expense of the lessee unless requested by an offset lessee, and then, at the risk and expense of the offset lessee. A copy of the survey shall be furnished the Supervisor.

§ 270.40 Well control.

The lessee or operator shall: (a) Take all necessary precautions to keep all wells under control at all times; (b) utilize trained and competent personnel; (c) utilize properly maintained equipment and materials; and (d) use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers, and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

§ 270.41 Pollution.

The lessee shall comply with all Federal and State standards with respect to the control of all forms of air, land, water, and noise pollution, including, but not limited to, the control of erosion and the disposal of liquid, solid, and gaseous wastes. The Supervisor may, in his discretion, establish additional and more stringent standards, and, if he does so, the lessee shall comply with those standards. Plans for disposal of well effluents must take into account effects on surface and subsurface waters; plants, fish and wildlife and their habitats, atmosphere, or any other effects which may cause or contribute to pollution, and such plans must be approved by the Supervisor before action is taken under them.

§ 270.42 Noise abatement.

The lessee shall minimize noise during exploration, development and production activities. Welfare of the operating personnel and the public must not be affected as a consequence of the noise created by the expanding gases. The method and degree of noise abatement shall be as approved by the Supervisor.

§ 270.43 Land subsidence and seismic activity.

In the event subsidence or seismic activity results from the production of geothermal resources, as determined by monitoring activities by the lessee or a government body, the lessee shall take such action as required by the lease or by the Supervisor.

§ 270.44 Pits and sumps.

The lessee shall provide and use pits and sumps of adequate capacity and design to retain all materials and fluids necessary to drilling, production, or other operations unless otherwise specified by the Supervisor. In no event shall the contents of a pit or sump be allowed to: (a) Contaminate streams, artificial canals or waterways, ground waters, lakes or rivers; (b) adversely affect environment, persons, plants, fish and wildlife and their habitats; or (c) damage the aesthetic values of the property or adjacent properties. When no longer needed, pits and sumps are to be filled and covered and the premises restored to a near natural state, as prescribed by the Supervisor.

§ 270.45 Well abandonment.

The lessee shall promptly plug and abandon any well on the leased land that is not used or useful. No well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Supervisor. Before abandoning a producible well, the lessee shall submit to the Supervisor a statement of reasons for abandonment and his detailed plans for carrying on the necessary work. The detailed plans shall provide for the preservation of fresh water aquifers and for the prevention of intrusion into such aquifers

of saline or polluted waters. A producible well may be abandoned only after receipt of written approval by the Supervisor. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the Supervisor. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Supervisor. Drilling equipment shall not be removed from any suspended drilling well without taking adequate measures to close the well and protect the subsurface resources.

§ 270.46 Accidents.

The lessee shall take all reasonable precautions to prevent accidents and shall notify the Supervisor within 24 hours of all accidents on the leased land, and shall submit a full report thereon within 15 days.

§ 270.47 Workmanlike operations.

The lessee shall carry on all operations and maintain the property at all times in a workmanlike manner, having due regard for the conservation of the property and the environment and for the health and safety of employees. The lessee shall remove from the property or store, in an orderly manner, all scrap or other materials not in use.

§ 270.48 Departure from orders.

The Supervisor may prescribe or approve either in writing or orally, with prompt written confirmation, variances from the requirements of GRO orders and other orders issued pursuant to these regulations, when such variances are necessary for the proper control of a well, conservation of natural resources, protection of human health and safety, property, or the environment. The Supervisor shall inform other Federal and State agencies, as appropriate, of any action taken under this section.

§ 270.49 Sales contracts.

The lessee shall file with the Supervisor within 30 days after the effective date of the sales contract a copy of any contract for the disposal of geothermal resources from the lease.

§ 270.50 Royalty payments.

The lessee shall pay all royalties as due under the terms of the lease. Payments of royalties are due not later than the last day of the month following the month in which the resource is sold or utilized, and shall be by check, bank draft, or money order, drawn to the order of the United States Geological Survey.

MEASUREMENT OF PRODUCTION AND COMPUTATION OF ROYALTIES

§ 270.60 Measurement of geothermal resources.

The lessee shall measure or gauge all production in accordance with methods approved by the Supervisor. The quantity and quality of all production shall

be determined in accordance with the standard practices, procedures, and specifications generally used in industry. All measuring equipment shall be tested periodically and, if found defective, the Supervisor will determine the quantity and quality of production from the best evidence available.

§ 270.61 Determination of content of byproducts.

The lessee shall periodically furnish the Supervisor the results of periodic tests showing the content of byproducts in the produced geothermal fluid and gases. Such tests shall be taken as specified by the Supervisor and by the method of testing approved by him.

§ 270.62 Value of geothermal production for computing royalties.

(a) The value of geothermal production from the leased premises for the purpose of computing royalties shall be the reasonable value of the energy and the byproducts attributable to the lease as determined by the Supervisor. In determining the reasonable value of the energy and the byproducts the Supervisor shall consider:

(1) The highest price paid for a majority of the production of like quality in the same field or area;

(2) The total consideration accruing to the lessee from any disposition of the geothermal production;

(3) The value of the geothermal production used by the lessee;

(4) The value and cost of alternate available energy sources and byproducts;

(5) The cost of exploration and production, exclusive of taxes;

(6) The economic value of the resource in terms of its ultimate utilization;

(7) Production agreements between producer and purchaser; and

(8) Any other matters which he may consider relevant.

(b) Under no circumstances shall the value of any geothermal production for the purposes of computing royalties be less than:

(1) The total consideration accruing to the lessee from the sale thereof in cases where geothermal resources are sold by the lessee to another party;

(2) That amount which is the value of the end product attributable to the geothermal resource produced from a particular lease where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing, power production, or other industrial activity; or

(3) When a part of the resource only is utilized by the lessee and the remainder sold, the sum of the value of the end product attributable to the geothermal resource and the sales price received for the geothermal resources

§ 270.63 Computation of royalties.

(a) The value of geothermal production from a particular lease as determined pursuant to § 270.62 hereof, shall be apportioned between geothermal

steam, heat, and other forms of energy and the byproducts.

(b) The royalties payable shall be the sum of (1) the amount resulting from the multiplication of the value attributable to the geothermal steam, heat, and other forms of energy by the royalty rate set for such forms of geothermal energy in the lease and (2) the amount resulting from the multiplication of the value attributable to byproducts by the royalty rate for byproducts set in the lease.

§ 270.64 Commingling production.

The supervisor may authorize a lessee to commingle production from wells on his lease with production from other leases held by him or by other lessees subjects to such conditions as he may prescribe.

REPORTS TO BE MADE BY ALL LESSEES (INCLUDING OPERATORS)

§ 270.70 General requirements.

Information required to be submitted in accordance with the regulations in this part shall be furnished as directed by the Supervisor. Copies of forms can be obtained from the Supervisor and must be filed with that official within the time limit prescribed.

§ 270.71 Application for permit to drill, redrill, deepen, or plug-back.

(a) A permit to drill, redrill, deepen, or plug-back a well on Federal lands must be obtained from the Supervisor before the work is begun. The application for the permit, which shall be filed in triplicate with the Supervisor, shall state the location of the well in feet, and direction from the nearest section or tract lines as shown on the official plat of survey or protracted surveys; the altitude of the ground and derrick floor above sea level and how it was determined, and should be accompanied by a proposed plan of operations as required by these regulations.

(b) The proposed drilling and casing plan shall be outlined in detail under the heading "Details of Work" in the applications referred to herein, and shall describe the type of tools and equipment to be used, the proposed depth to which the well will be drilled, the estimated depths to the top of important markers, the estimated depths at which water, geothermal resources, or other mineral resources are expected, the proposed casing program (including the size and weight of casing), the depth at which each string is to be set, and the amount of cement and mud to be used, the drilling method and type of circulating media (water, mud, foam, air or combinations thereof), the type of blowout prevention equipment to be used, the proposed coring, logging, or other program (such as drilling time log and sample description) to be used to determine the formations penetrated and the proposed program for determining geothermal gradients and the sampling and analysis of geothermal resources.

(c) Each application shall be accompanied by a plat showing the surface and expected bottomhole locations and

the distances from the nearest section or tract lines as shown on the official plat of survey or protracted surveys. The scale shall not be less than 2,000 feet to 1 inch.

(d) Each application should be accompanied by supporting structural and hydrologic information based on available geologic and geophysical data.

§ 270.72 Sundry notices and reports on wells.

(a) Any written notice of intention to do work or to change plans previously approved must be filed with the Supervisor in triplicate, unless otherwise directed, and must be approved by him before the work is begun. If, in case of emergency, any notice is given orally or by wire, and approval is obtained, the transaction shall be confirmed in writing. A subsequent report of the work performed must also be filed with the Supervisor.

(b) Casing test: Notice shall be given in advance to the Supervisor or his representative of the date and time when the operator expects to make a casing test. Later, by agreement, the exact time shall be fixed. In the event of casing failure during the test, the casing must be repaired or replaced or recemented as required by the Supervisor or his representative. The results of the test must be reported within 30 days after making a casing test. The report must describe the test completely and state the amount of mud and cement used, the lapse of time between running and cementing the casing and making the test, and the method of testing.

(c) Repairs or conditioning of well: Before the repairing or conditioning of a well, a notice setting forth in detail the plan of work must be filed with, and approved by, the Supervisor. A detailed report of the work accomplished and the methods employed, including all dates, and the results of such work must be filed within 30 days after completion of the repair work.

(d) Well stimulation: Before the lessee commences stimulation of a well by any means, a notice, setting forth in detail the plan of work, must be filed with and approved by the Supervisor. The notice shall name the type of stimulant and the amount to be used. A report showing the amount of stimulant used and the production rate before and after stimulation must be filed within 30 days from completion of the work.

(e) Altering casing in a well: Notice of intention to run a liner or to alter the casing by pulling or perforating by any means must be filed with and approved by the Supervisor before the work is started. This notice shall set forth in detail the plan of work. A report must be filed within 30 days after completion of the work stating exactly what was done and the results obtained.

(f) Notice of intention to abandon well: Before abandonment work is begun on any well, whether a drilling well, geothermal resources well, water well, or so-called dry hole, notice of intention to abandon shall be filed with, and approved

by, the Supervisor. The notice must be accompanied by a complete log, in duplicate, of the well to date, provided the complete log has not been filed previously, and must give a detailed statement of the proposed work, including such information as kind, location, and length of plugs (by depths), plans for mudding, cementing, shooting, testing, and removing casing, and any other pertinent information.

(g) Subsequent report of abandonment: After a well is abandoned or plugged, a subsequent record of work done must be filed with the Supervisor. This report shall be filed separately within 30 days after the work is done. The report shall give a detailed account of the manner in which the abandonment or plugging work was carried out, including the nature and quantities of materials used in plugging and the location and extent (by depths) of the plugs of different materials; records of any tests or measurements made, and of the amount, size, and location (by depths) of casing left in the well; and a detailed statement of the volume of mud fluid used, and the pressure attained in mudding. If an attempt was made to part any casing, a complete report of the methods used and results obtained must be included.

§ 270.73 Log and history of well.

The lessee shall furnish in duplicate to the Supervisor, not later than 30 days after the completion of each well, a complete and accurate log and history, in chronological order, of all operations conducted on the well. A log shall be compiled for geologic information from cores or formations samples and duplicate copies of such log shall be filed. Duplicate copies of all electric logs, temperature surveys, water and steam analyses, hydrologic or heat flow tests, or direction surveys, if run, shall be furnished.

§ 270.74 Monthly report of operations.

A report of operations for each lease must be made for each calendar month, beginning with the month in which drilling operations are initiated. The report must be filed in duplicate with the Supervisor on or before the last day of the month following the month for which the report is filed unless an extension of time for the filing of the report is granted by the Supervisor. The report shall disclose accurately all operations conducted on each well during the month, the status of operations on the last day of the month, and a general summary of the status of operations on the leased lands. The report must be submitted each month until the lease is terminated or until omission of the report is authorized by the Supervisor. The report shall show for each calendar month:

(a) The lease serial number or the unit or communitization agreement number which shall be inserted in the upper right corner;

(b) Each well listed separately by number, and its location by 40-acre subdivision (quarter-quarter section or lot),

section number, township, range, and meridian;

(c) The number of days each well was produced, whether steam or hot water or both were produced, and the number of days each input well was in operation, if any;

(d) The quantity of production and any byproducts obtained from each well, if any are recovered;

(e) The depth of each active or suspended well, and the name, character, and depth of each formation drilled during the month, the date and reason for every shutdown, the names and depths of important formation changes, the amount and size of any casing run since the last report, the dates and results of any tests or environmental monitoring conducted, and any other noteworthy information on operations not specifically provided for in the form.

(f) The footnote must be completely filled out as required by the Supervisor. If no sales were made during the calendar month, the report must so state.

§ 270.75 Monthly report of sales and royalty.

A report of sales and royalty for each productive lease must be filed each month once sales of production are made even though sales may be intermittent, unless otherwise authorized by the Supervisor. Total volumes of geothermal resources produced and sold, the value of production, and the royalty due the lessor must be shown. If byproducts are being recovered, the same requirement shall be applicable. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the United States. Payment or royalty is to be made pursuant to § 270.50 unless otherwise authorized by the Supervisor.

§ 270.76 Annual report of compliance with environmental protection requirements.

The lessee shall submit annually a report giving a full account of the actions taken to comply with the appropriate Federal and State regulations or requirements of the Supervisor pertaining to the protection of the surface and subsurface environment. This report shall include but is not limited to such matters as:

- (a) Noise abatement;
- (b) Water quality;
- (c) Air quality;
- (d) Erosion control;
- (e) Subsidence and seismic activity;
- (f) Rehabilitation activities;
- (g) Waste disposal; and
- (h) Environmental effects on flora and fauna.

§ 270.77 Annual report of expenditures for diligent exploration operations.

A report of expenditures for exploration operations conducted during a lease year must be submitted annually to the Supervisor in order that such expenditures may be considered for qualification as diligent exploration pursuant to 43 CFR 3203.5.

§ 270.78 Forms or reports.

When forms or reports other than those referred to in the regulations in this part may be necessary, instructions for the filing of such forms or reports will be given by the Supervisor.

§ 270.79 Public inspection of records.

Geologic and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect.

PROCEDURE IN CASE OF VIOLATION OF
THE REGULATIONS OR LEASE TERMS

§ 270.80 Noncompliance with regulations or lease terms.

Whenever a lessee or anyone acting under his authority fails to comply with the provisions of the regulations or lease terms, the Supervisor shall give the lessee notice to remedy any defaults or violations. The Supervisor is authorized to shut down any operations which he determines are unsafe or are causing or can cause pollution. Failure by the lessee to perform or commence the necessary remedial action pursuant to the notice will result in a shut down of operations and may result in referral of the matter to the authorized officer of the Bureau of Land Management for action pursuant to 43 CFR 3245.3.

APPEALS

§ 270.90 Appeals.

(a) Any party to a case adversely affected by a final order or decision of an officer of the Conservation Division of the Geological Survey shall have a right to appeal to the Director, unless the order or decision was approved by the Secretary or the Director prior to promulgation.

(b) An appeal to the Director may be taken by filing a notice of appeal in the office of the official who issued the order or decision within 30 days from service of the order or decision. The notice of appeal shall incorporate, or be accompanied by, such written showing and argument on the facts and the law as the appellant may deem adequate to justify reversal or modification of the order or decision. Within the same 30-day period, the appellant will be permitted to file in the office of the officer who issued the order or decision additional statements of reasons and written arguments or briefs. The officer with whom the appeal is filed shall transmit the appeal and accompanying papers to the Director with a full report and his recommendation on the appeal. The Director will review the record and render a decision in the case.

(c) Oral argument in any case pending before the Director will be allowed on motion in the discretion of such officer and at a time to be fixed by him.

(d) With the exception of the time fixed for filing a notice of appeal, the time for filing any document in connection with an appeal may be extended by the Director. A request for an extension

of time must be filed within the time allowed for filing of the document and must be filed in the same office in which the document in connection with which the extension is requested must be filed.

(e) Any party to a case adversely affected by a decision of the Director under this part shall have a right of appeal to the Board of Land Appeals in the Office of Hearings and Appeals, Office of the Secretary, in accordance with the procedures provided in 43 CFR Part 4, Department Hearings and Appeals Procedures.

**PART 271—GEOTHERMAL RESOURCES UNIT PLAN REGULATIONS
(INCLUDING SUGGESTED FORMS)**

GENERAL PROVISIONS

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271.16	Form of designation of successor unit operator by working interest owners.
271.17	Form of change in unit operator by assignment.

AUTHORITY: The provisions of this Part 271 issued under section 18 of the Geothermal Steam Act of 1970 (84 Stat. 1566) (see 43 CFR Subpart 3244).

§ 271.1 Introduction.

The regulations in this part prescribe the procedure to be followed and the requirements to be met by holders of Federal geothermal leases (see § 271.2d) and their representatives who wish to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan for the development of any geothermal resources pool, field, or like area, or any part thereof. Such agreements may be initiated by lessees, or where in the interest of conserving natural resources they are deemed necessary they may be required by the Director.

§ 271.2 Definitions.

The following terms, as used in this part or in any agreement approved under the regulations in this part, shall have the meanings here indicated unless otherwise defined in such agreement:

(a) *Unit agreement.* An agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without re-

gard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

(b) *Cooperative agreement.* An agreement or plan of development and operations for the production and utilization of geothermal resources made subject thereto in which separate ownership units are independently operated without allocation of production.

(c) *Agreement.* For convenience, the term "agreement" as used in the regulations in this part refers to either a unit or a cooperative agreement as defined in paragraphs (a) and (b) of this section unless otherwise indicated.

(d) *Geothermal lease.* A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Part 3200, and, unless the context indicates otherwise, "lease" means a geothermal lease.

(e) *Unit area.* The area described in a unit agreement as constituting the land logically subject to development under such agreement.

(f) *Unitized land.* The part of a unit area committed to a unit agreement.

(g) *Unitized substances.* Deposits of geothermal resources recovered from unitized land by operation under and pursuant to a unit agreement.

(h) *Unit operator.* The person, association, partnership, corporation, or other business entity designated under a unit agreement to conduct operations on unitized land as specified in such agreement.

(i) *Participating area.* That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(j) *Working interest.* The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in a unit or cooperative agreement, the owner of such interest is vested with the right to explore for, develop, produce, and utilize such resources. The right delegated to the unit operator as such by the unit agreement is not to be regarded as a working interest.

(k) *Secretary.* The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(l) *Director.* The Director of the U.S. Geological Survey.

(m) *Supervisor.* A representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

§ 271.3 Designation of area.

An application for designation of an area as logically subject to development

and/or operation under a unit or cooperative agreement may be filed, in triplicate, by any proponent of such an agreement through the Supervisor. Each copy of the application shall be accompanied by a map or diagram on a scale of not less than 1 inch to 1 mile, outlining the area sought to be designated under this section. The Federal, State, and privately owned land should be indicated on said map by distinctive symbols or colors and Federal geothermal leases and lease applications should be identified by serial number. Geological information, including the results of geophysical surveys, and such other information as may tend to show that unitization is necessary and advisable in the public interest should be furnished in triplicate. Geological and geophysical information and data so furnished will not be available for public inspection, as provided by 5 U.S.C. section 552(b), without the consent of the proponent. The application and supporting data will be considered by the Director and the applicant will be informed of the decision reached. The designation of an area, pursuant to an application filed under this section, shall not create an exclusive right to submit an executed agreement for such area, nor preclude the inclusion of such area or any part thereof in another unit area.

§ 271.4 Preliminary consideration of agreements.

The form of unit agreement set forth in § 271.12 is acceptable for use in unproved areas. The use of this form is not mandatory, but any proposed departure therefrom should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. In areas proposed for unitization in which a discovery of geothermal resources has been made, or where a cooperative agreement is contemplated, the proposed agreement should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. The proposed form of agreement should be submitted in triplicate and should be plainly marked to identify the proposed variances from the form of agreement set forth in § 271.12.

§ 271.5 State land.

Where State-owned land is to be included in the unit, approval of the agreement by appropriate State officials should be obtained prior to its submission to the Department for approval of the executed agreement. When authorized by the laws of the State in which the unitized land is situated, provisions may be made in the agreement accepting State law, to the extent that they are applicable to non-Federal unitized land.

§ 271.6 Qualifications of unit operator.

A unit operator must qualify as to citizenship in the same manner as those holding interests in geothermal leases issued under the Geothermal Steam Act

of 1970. The unit operator may be an owner of a working interest in the unit area or such other party as may be selected by the owners of working interests and approved by the Supervisor. The unit operator shall execute an acceptance of the duties and obligations imposed by the agreement. No designation of, or change in, a unit operator will become effective unless and until approved by the Supervisor, and no such approval will be granted unless the unit operator is deemed qualified to fulfill the duties and obligations prescribed in the agreement.

§ 271.7 Parties to unit or cooperative agreement.

The owners of any rights, title, or interest in the geothermal resources deposits to be developed and operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner falls or refuses to join the agreement, the proponent of the agreement should declare this to the Supervisor and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

§ 271.8 Approval of an executed unit or cooperative agreement.

(a) A duly executed unit or cooperative agreement will be approved by the Secretary, or his duly authorized representative, upon a determination that such agreement is necessary or advisable in the public interest and is for the purpose of properly conserving the natural resources. Taking into account the environmental consequences of the action. Such approval will be incorporated in a certificate appended to the agreement. No such agreement will be approved unless at least one of the parties is a holder of a Federal lease embracing lands being committed to the agreement and unless the parties signatory to the agreement hold sufficient interests in the area to give effective control of operations therein.

(b) Where a duly executed agreement is submitted for Departmental approval, a minimum of six signed counterparts should be filed. The same number of counterparts should be filed for documents supplementing, modifying, or amending an agreement, including change of operator, designation of new operator, and notice of surrender, relinquishment, or termination.

(c) The address of each signatory party to the agreement should be inserted below the party's signature. Each signature should be attested by at least one witness, if not notarized. Corporate or other signatures made in a representative capacity must be accompanied by evidence of the authority of the signatories to act unless such evidence is already a matter of record in the United States Geological Survey. (The parties may execute any number of counterparts of the agreement with the same force and effect as if all parties signed the

same document, or may execute a ratification or consent in a separate instrument with like force and effect.)

(d) Any modification of an approved agreement will require approval of the Secretary or his duly authorized representative under procedures similar to those cited in paragraph (a) of this section.

§ 271.9 Filing of papers and number of counterparts.

(a) All proposals and supporting papers, instruments, and documents submitted under this part should be filed with the Supervisor, unless otherwise provided in this part or otherwise instructed by the Director.

(b) Plans of development and operation, plans of further development and operation, and proposed participating areas and revisions thereof should be submitted in quadruplicate.

(c) Each application for approval of a participating area, or revision thereof, should be accompanied by three copies of a substantiating geologic and engineering report, structure contour map or maps, cross-section or other pertinent data.

(d) Other instruments or documents submitted for approval should be submitted for approval in sufficient number to permit the approving official to return at least one approved counterpart.

§ 271.10 Bonds.

In lieu of separate bonds required for each Federal lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Supervisor shall determine to be adequate to protect the interests of the United States. Additional bond coverage may be required whenever deemed necessary by the Supervisor. The bond must be filed with and accepted by the Bureau of Land Management before operations will be approved. A form of corporate surety bond is set forth in § 271.15. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

§ 271.11 Appeals.

Appeals may be taken in the manner provided in § 270.90 of this chapter from any decision or order issued under the regulations in this part, unless such decision or order was approved by the Secretary prior to promulgation.

§ 271.12 Form of unit agreement for unproved areas.

UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE ----- UNIT AREA
COUNTY OF -----
STATE OF -----

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UNIT AGREEMENT

COUNTY

This Agreement entered into as of the ----- day of -----, 19--, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto".

WITNESSETH: Whereas the parties hereto are the owners of working, royalty, or other geothermal resources interests in land subject to this Agreement; and

Whereas the Geothermal Steam Act of 1970 (84 Stat. 1566), hereinafter referred to as the "Act", authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any geothermal resources pool, field, or like area, or any part thereof, for the purpose of more properly conserving the natural resources thereof, whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

Whereas the parties hereto hold sufficient interest in the ----- Unit Area covering the land herein described to effectively control operations therein; and

Whereas, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operations of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

Now, therefore, in consideration of the premises and the promises herein contained,

the parties hereto commit to this agreement their respective interests in the below-defined Unit Area, and agree severally among themselves as follows:

ARTICLE I—ENABLING ACT AND REGULATIONS

1.1 The Act and all valid pertinent regulations, including operating and unit plan regulations, heretofore or hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands.

1.2 As to non-Federal lands, the geothermal resources operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this agreement.

ARTICLE II—DEFINITIONS

2.1 The following terms shall have the meanings here indicated:

(a) *Geothermal lease*. A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Group 3200 and, unless the context indicates otherwise, "lease" shall mean a geothermal lease.

(b) *Unit area*. The area described in Article III of this Agreement.

(c) *Unit Operator*. The person, association, partnership, corporation, or other business entity designated under this Agreement to conduct operations on Unitized Land as specified herein.

(d) *Participating area*. That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(e) *Working interest*. The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in this Agreement, the owner of such interest is vested with the right to explore for, develop, produce and utilize such resources. The right delegated to the Unit Operator as such by this Agreement is not to be regarded as a Working Interest.

(f) *Secretary*. The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(g) *Director*. The Director of the U.S. Geological Survey.

(h) *Supervisor*. A representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

ARTICLE III—UNIT AREA AND EXHIBITS

3.1 The area specified on the map attached hereto marked "Exhibit A" is hereby designated and recognized as constituting the Unit Area, containing ----- acres, more or less.

The above-described Unit Area shall when practicable be expanded to include therein any additional lands or shall be contracted to exclude lands whenever such expansion or contraction is deemed to be necessary or advisable to conform with the purposes of this Agreement.

3.2 Exhibit A attached hereto and made a part hereof is a map showing the boundary of the Unit Area, the boundaries and iden-

tity of tracts and leases in said area to the extent known to the Unit Operator.

3.3 Exhibit B attached hereto and made a part hereof is a schedule showing to the extent known to the Unit Operator the acreage, percentage, and kind of ownership of geothermal resources interests in all lands in the Unit Area.

3.4 Exhibits A and B shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, or when requested by the Supervisor, and not less than five copies of the revised Exhibits shall be filed with the Supervisor.

ARTICLE IV—CONTRACTION AND EXPANSION OF UNIT AREA

4.1 Unless otherwise specified herein, the expansion and/or contraction of the Unit Area contemplated in Article 3.1 hereof shall be effected in the following manner:

(a) Unit Operator either on demand of the Director or on its own motion and after prior concurrence by the Director, shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the Unit Area, the reasons therefore, and the proposed effective date thereof, preferably the first day of a month subsequent to the date of notice.

(b) Said notice shall be delivered to the Supervisor, and copies thereof mailed to the last known address of each Working Interest Owner, Lessee, and Lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator, together with an application in sufficient number, for approval of such expansion or contraction and with appropriate joinders.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the Supervisor, become effective as of the date prescribed in the notice thereof.

4.2 Unitized Leases, insofar as they cover any lands which are excluded from the Unit Area under any of the provisions of this Article IV may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions contained in the Act, and the lease or leases and amendments thereto, except that operations and/or production under this Unit Agreement shall not serve to maintain or continue the excluded portion of any lease.

4.3 All legal subdivisions of unitized lands (i.e., 40 acres by Governmental survey or its nearest lot or tract equivalent in instances of irregular surveys), no part of which is entitled to be within a Participating Area on the fifth anniversary of the effective date of the initial Participating Area established under this Agreement, shall be eliminated automatically from this Agreement effective as of said fifth anniversary and such lands shall no longer be a part of the Unit Area and shall no longer be subject to this Agreement unless diligent drilling operations are in progress on an exploratory well on said fifth anniversary, in which event such lands shall not be eliminated from the Unit Area for as long as exploratory drilling operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.

4.4 An exploratory well, for the purposes of this Article IV is defined as any well, regardless of surface location, projected for com-

pletion in a zone or deposit below any zone or deposit for which a Participating Area has been established and is in effect, or any well, regardless of surface location, projected for completion at a subsurface location under Unitized Lands not entitled to be within a Participating Area.

4.5 In the event an exploratory well is completed during the four (4) months immediately preceding the fifth anniversary of the initial Participating Area established under this Agreement, lands not entitled to be within a Participating Area shall not be eliminated from this Agreement on said fifth anniversary, provided the drilling of another exploratory well is commenced under an approved Plan of Operation within four (4) months after the completion of said well. In such event, the land not entitled to be in participation shall not be eliminated from the Unit Area so long as exploratory drilling operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.

4.6 With prior approval of the Supervisor, a period of time in excess of four (4) months may be allowed to elapse between the completion of one well and the commencement of the next well without the automatic elimination of nonparticipating acreage.

4.7 Unitized lands, proved productive by drilling operations which serve to delay automatic elimination of lands under this Article IV shall be incorporated into a Participating Area (or Areas) in the same manner as such lands would have been incorporated in such areas had such lands been proven productive during the year preceding said fifth anniversary.

4.8 In the event nonparticipating lands are retained under this Agreement after the fifth anniversary of the initial Participating Area as a result of exploratory drilling operations, all legal subdivisions of unitized land (i.e., 40 acres by Government survey or its nearest lot or tract equivalent in instances of irregular Surveys), no part of which is entitled to be within a Participating Area shall be eliminated automatically as of the 121 day, or such later date as may be established by the Supervisor, following the completion of the last well recognized as delaying such automatic elimination beyond the fifth anniversary of the initial Participating Area established under this Agreement.

ARTICLE V—UNITIZED LAND AND UNITIZED SUBSTANCES

5.1 All land committed to this Agreement shall constitute land referred to herein as "Unitized Land". All geothermal resources in and produced from any and all formations of the Unitized Land are unitized under the terms of this agreement and herein are called "Unitized Substances."

ARTICLE VI—UNIT OPERATOR

6.1 ----- is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, production, distribution and utilization of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to Unit Operator as the owner of a Working Interest when such an interest is owned by it.

ARTICLE VII—RESIGNATION OR REMOVAL OF UNIT OPERATOR

7.1 Prior to the establishment of a Participating Area, hereunder, Unit Operator

shall have the right to resign. Such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator or terminate Unit Operators rights, as such, for a period of six (6) months after notice of its intention to resign has been served by Unit Operator on all Working Interest Owners and the Supervisor, nor until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor, unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

7.2 After the establishment of a Participating Area hereunder Unit Operator shall have the right to resign in the manner and subject to the limitations provided in 7.1 above.

7.3 The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of Working Interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Supervisor.

7.4 The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title, or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, material, and appurtenances used in conducting the unit operations to the new duly qualified successor Unit Operator or, if no such new unit operator is elected, to the common agent appointed to represent the Working Interest Owners in any action taken hereunder to be used for the purpose of conducting operations hereunder.

7.5 In all instances of resignation or removal, until a successor Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for performance of the duties and obligations of Unit Operator, and shall not later than 30 days before such resignation or removal becomes effective appoint a common agent to represent them in any action to be taken hereunder.

7.6 The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

ARTICLE VIII—SUCCESSOR UNIT OPERATOR

8.1 If, prior to the establishment of a Participating Area hereunder, the Unit Operator shall resign as Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on an acreage basis, in the Unitized Land.

8.2 If, after the establishment of a Participating Area hereunder, the Unit Operator shall resign as Unit Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on a participating acreage basis. Provided, that, if a majority but less than 60 percent of the Working Interest in the Participating Lands is owned by the party to this agreement, a concurring vote of one or more additional Working Interest Owners owning 10 percent or more of the Working Interest in the participating land shall be required to select a new Unit Operator.

8.3 The selection of a successor Unit Operator shall not become effective until

(a) The Unit Operator so selected shall accept in writing the duties, obligations and responsibilities of the Unit Operator, and
(b) The selection shall have been approved by the Supervisor.

8.4 If no successor Unit Operator is selected and qualified as herein provided, the Director at his election may declare this Agreement terminated.

ARTICLE IX—ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT

9.1 Costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of Working Interests; all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of Working Interests, whether one or more, separately or collectively.

9.2 Any agreement or agreements entered into between the Working Interest Owners and the Unit Operator as provided in this Article, whether one or more, are herein referred to as the "Unit Operating Agreement".

9.3 The Unit Operating Agreement shall provide the manner in which the Working Interest Owners shall be entitled to receive their respective share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other contracts, and such other rights and obligations, as between Unit Operator and the Working Interest Owners.

9.4 Neither the Unit Operating Agreement nor any amendment thereto shall be deemed either to modify any of the terms and conditions of this Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement.

9.5 In case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Agreement shall govern.

9.6 Three true copies of any Unit Operating Agreement executed pursuant to this Article IX shall be filed with the Supervisor prior to approval of this Agreement.

ARTICLE X—RIGHTS AND OBLIGATIONS OF UNIT OPERATOR

10.1 The right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting, producing, distributing or utilizing Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as provided in this Agreement in accordance with a Plan of Operations approved by the Supervisor.

10.2 Upon request by Unit Operator, acceptable evidence of title to geothermal resources interests in the Unitized Land shall be deposited with the Unit Operator, and together with this Agreement shall constitute and define the rights, privileges, and obligations of Unit Operator.

10.3 Nothing in this Agreement shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that the Unit Operator, in its capacity as Unit Operator shall exercise the rights of possession and use vested in the parties hereto only for the purposes specified in this Agreement.

10.4 The Unit Operator shall take such measures as the Supervisor deems appropriate and adequate to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

10.5 The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and the quantity and rate of production under this Agreement.

ARTICLE XI—PLAN OF OPERATION

11.1 Concurrently with the submission of this Agreement for approval, Unit Operator shall submit an acceptable Initial Plan of Operation. Said plan shall be as complete and adequate as the Supervisor may determine to be necessary for timely exploration and/or development and to insure proper protection of the environment and conservation of the natural resources of the Unit Area.

11.2 Prior to the expiration of the Initial Plan of Operation, or any subsequent Plan of Operation, Unit Operator shall submit for approval of the Supervisor an acceptable subsequent Plan of Operation for the Unit Area which, when approved by the Supervisor, shall constitute the exploratory and/or development drilling and operating obligations of Unit Operators under this Agreement for the period specified therein.

11.3 Any plan of Operation submitted hereunder shall

(a) Specify the number and locations of any wells to be drilled and the proposed order and time for such drilling, and

(b) To the extent practicable, specify the operating practices regarded as necessary and advisable for proper conservation of natural resources and protection of the environment in compliance with section 1.1.

11.4 The Plan of Operation submitted concurrently with this Agreement for approval shall prescribe that within six (6) months after the effective date hereof, the Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor, unless on such effective date a well is being drilled conformably with the terms, hereof, and thereafter continue such drilling diligently until the ----- information has been tested or until at a lesser depth unitized substances shall be discovered which can be produced in paying quantities (i.e., quantities sufficient to repay the costs of drilling, completing, and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impracticable, provided, however, that Unit Operator shall not in any event be required to drill said well to a depth in excess of ----- feet.

11.5 The Initial Plan of Operation and/or subsequent Plans of Operation submitted under this article shall provide that the Unit Operator shall initiate a continuous drilling program providing for drilling of no less than one well at a time, and allowing no more than six (6) months time to elapse between completion of one well and the beginning of the next well, until a well capable of producing Unitized Substances in paying quantities is completed to the satisfaction of the Supervisor or until it is reasonably proved that the Unitized Land is incapable of producing Unitized Substances in paying quantities in the formations drilled under this Agreement.

11.6 When warranted by unforeseen circumstances, the Supervisor may grant a single extension of any or all of the critical dates for exploratory drilling operations cited in the initial or subsequent Plans of Operation. No such extension shall exceed a period of four (4) months for each well, required by the Initial Plan of Operation.

11.7 Until there is actual production of Unitized Substances, the failure of Unit Operator to timely drill any of the wells provided for in Plans of Operation required under this Article XI or to timely submit an acceptable subsequent Plan of Operations, shall, after notice of default or notice of prospective default to Unit Operator by the Supervisor and after failure of Unit Operator to remedy any actual default within a reasonable time (as determined by the Super-

visor), result in automatic termination of this Agreement effective as of the date of the default, as determined by the Supervisor.

11.8 Separate Plans of Operations may be submitted for separate productive zones, subject to the approval of the Supervisor. Also subject to the approval of the Supervisor, Plans of Operation shall be modified or supplemented when necessary to meet changes in conditions or to protect the interest of all parties to this Agreement.

ARTICLE XII—PARTICIPATING AREAS

12.1 Prior to the commencement of production of Unitized Substances, the Unit Operator shall submit for approval by the Supervisor a schedule (or schedules) of all land then regarded as reasonably proved to be productive from a pool or deposit discovered or developed; all lands in said schedule (or schedules), on approval of the Supervisor, will constitute a Participating Area (or Areas) effective as of the date production commences or the effective date of this Unit Agreement, whichever is later. Said schedule (or schedules) shall also set forth the percentage of Unitized Substances to be allocated, as herein provided, to each tract in the Participating Area (or Areas) so established and shall govern the allocation of production commencing with the effective date of the Participating Area.

12.2 A separate Participating Area shall be established for each separate pool or deposit of Unitized Substances or for any group thereof which is produced as a single pool or deposit and any two or more Participating Areas so established may be combined into one, on approval of the Supervisor. The effective date of any Participating Area established after the commencement of actual production of Unitized Substances shall be the first of the month in which is obtained the knowledge or information on which the establishment of said Participating Area is based, unless a more appropriate effective date is proposed by the Unit Operator and approved by the Supervisor.

12.3 Any Participating Area (or Areas) established under 12.1 or 12.2 above shall, subject to the approval of the Supervisor, be revised from time to time to include additional land then regarded as reasonably proved to be productive from the pool or deposit for which the Participating Area was established or to include lands necessary to unit operations, or to exclude land then regarded as reasonably proved not to be productive from the pool or deposit for which the Participating Area was established or to exclude land not necessary to unit operations and the schedule (or schedules) of allocation percentages shall be revised accordingly.

12.4 Subject to the limitation cited in 12.1 hereof, the effective date of any revision of a Participating Area established under Articles 12.1 or 12.2 shall be the first of the month in which is obtained the knowledge or information on which such revision is predicated, provided, however, that a more appropriate effective date may be used if justified by the Unit Operator and approved by the Supervisor.

12.5 No land shall be excluded from a Participating Area on account of depletion of the Unitized Substances, except that any Participating Area established under the provisions of this Article XII shall terminate automatically whenever all operations are abandoned in the pool or deposit for which the Participating Area was established.

12.6 Nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of a Participating Area.

ARTICLE XIII—ALLOCATION OF UNITIZED SUBSTANCES

13.1 All Unitized Substances produced from a Participating Area, established under this Agreement, shall be deemed to be produced equally on an acreage basis from the several tracts of Unitized Land within the Participating Area established for such production.

13.2 For the purpose of determining any benefits accruing under this Agreement, each Tract of Unitized Land shall have allocated to it such percentage of said production as the number of acres in the Tract included in the Participating Area bears to the total number of acres of Unitized Land in said Participating Area.

13.3 Allocation of production hereunder for purposes other than for settlement of the royalty obligations of the respective Working Interest Owners, shall be on the basis prescribed in the Unit Operating Agreement whether in conformity with the basis of allocation set forth above or otherwise.

13.4 The Unitized Substances produced from a Participating Area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said Participating Area.

ARTICLE XIV—RELINQUISHMENT OF LEASES

14.1 Pursuant to the provisions of the Federal leases and 43 CFR 3245.1, a lessee of record shall, subject to the provisions of the Unit Operating Agreement, have the right to relinquish any of its interests in leases committed hereto, in whole or in part; provided, that no relinquishment shall be made of interests in land within a Participating Area without the prior approval of the Director.

14.2 A Working Interest Owner may exercise the right to surrender, when such right is vested in it by any non-Federal lease, sublease, or operating agreement, provided that each party who will or might acquire the Working Interest in such lease by such surrender or by forfeiture is bound by the terms of this Agreement, and further provided that no relinquishment shall be made of such land within a Participating Area without the prior written consent of the non-Federal Lessor.

14.3 If as the result of relinquishment, surrender, or forfeiture the Working Interests become vested in the fee owner or lessor of the Unitized Substances, such owner may:

(1) Accept those Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement; or

(2) Lease the portion of such land as is included in a Participating Area established hereunder, subject to this Agreement and the Unit Operating Agreement; and provide for the independent operation of any part of such land that is not then included within a Participating Area established hereunder.

14.4 If the fee owner or lessor of the Unitized Substances does not, (1) accept the Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement, or (2) lease such lands as provided in 14.3 above within six (6) months after the relinquished, surrendered, or forfeited Working Interest becomes vested in said fee owner or lessor, the Working Interest benefits and obligations accruing to such land under this Agreement and the Unit Operating Agreement shall be shared by the owners of the remaining unitized Working Interests in accordance with their respective Working Interest ownerships, and such owners of Working Interests shall compensate the fee owner or lessor of Unitized Substances in such lands by paying sums equal to the rentals, minimum royalties, and royal-

ties applicable to such lands under the lease or leases in effect when the Working Interests were relinquished, surrendered, or forfeited.

14.5 Subject to the provisions of 14.4 above, an appropriate accounting and settlement shall be made for all benefits accruing to or payments and expenditures made or incurred on behalf of any surrendered or forfeited Working Interest subsequent to the date of surrender or forfeiture, and payment of any moneys found to be owing by such an accounting shall be made as between the parties within thirty (30) days.

14.6 In the event no Unit Operating Agreement is in existence and a mutually acceptable agreement cannot be consummated between the proper parties, the Supervisor may prescribe such reasonable and equitable conditions of agreement as he deems warranted under the circumstances.

14.7 The exercise of any right vested in a Working Interest Owner to reassign such Working Interest to the party from whom obtained shall be subject to the same conditions as set forth in this Article XIV in regard to the exercise of a right to surrender.

ARTICLE XV—RENTALS AND MINIMUM ROYALTIES

15.1 Any unitized lease on non-Federal land containing provisions which would terminate such lease unless drilling operations are commenced upon the land covered thereby within the time therein specified or rentals are paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provisions of this Agreement, be deemed to accrue as to the portion of the lease not included within a Participating Area and become payable during the term thereof as extended by this Agreement, and until the required drillings are commenced upon the land covered thereby.

15.2 Rentals are payable on Federal leases on or before the anniversary date of each lease year; minimum royalties accrue from the anniversary date of each lease year and are payable at the end of the lease year.

15.3 Beginning with the lease year commencing on or after ----- and for each lease year thereafter, rental or minimum royalty for lands of the United States subject to this Agreement shall be made on the following basis:

(a) An advance annual rental in the amount prescribed in unitized Federal leases, in no event creditable against production royalties, shall be paid for each acre or fraction thereof which is not within a Participating Area.

(b) A minimum royalty shall be charged at the beginning of each lease year (such minimum royalty to be due as of the last day of the lease year and payable within thirty (30) days thereafter) of \$2 an acre or fraction thereof, for all Unitized Acreage within a Participating Area as of the beginning of the lease year. If there is production during the lease year the deficit, if any, between the actual royalty paid and the minimum royalty prescribed herein shall be paid.

15.4 Rental or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator.

15.5 Settlement for royalty interest shall be made by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator, on or before the last day of each month for Unitized Substances produced during the preceding calendar month.

15.6 Royalty due the United States shall be computed as provided in the operating regulations and paid in value as to all Unitized Substances on the basis of the amounts

thereof allocated to unitized Federal land as provided herein at the royalty rate or rates specified in the respective Federal leases.

15.7 Nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental, minimum royalty, or royalty due under their leases.

ARTICLE XVI—OPERATIONS ON NONPARTICIPATING LAND

16.1 Any party hereto owning or controlling the Working Interest in any Unitized Land having thereon a regular well location may, with the approval of the Supervisor and at such party's sole risk, costs, and expense, drill a well to test any formation of deposit for which a Participating Area has not been established or to test any formation or deposit for which a Participating Area has been established if such location is not within said Participating Area, unless within 30 days of receipt of notice from said party of his intention to drill the well, the Unit Operator elects and commences to drill such a well in like manner as other wells are drilled by the Unit Operator under this Agreement.

16.2 If any well drilled by a Working Interest Owner other than the Unit Operator proves that the land upon which said well is situated may properly be included in a Participating Area, such Participating Area shall be established or enlarged as provided in this Agreement and the well shall thereafter be operated by the Unit Operator in accordance with the terms of this Agreement and the Unit Operating Agreement.

ARTICLE XVII—LEASES AND CONTRACTS CONFORMED AND EXTENDED

17.1 The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or utilization of geothermal resources on lands committed to this Agreement, are hereby expressly modified and amended only to the extent necessary to make the same conform to the provisions hereof, otherwise said leases, subleases, and contracts shall remain in full force and effect.

17.2 The parties hereto consent that the Secretary shall, by his approval hereof, modify and amend the Federal leases committed hereto and the regulations in respect thereto to the extent necessary to conform said leases and regulations to the provisions of this Agreement.

17.3 The development and/or operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of any obligations for development and operation with respect to each and every separately owned tract subject to this Agreement, regardless of whether there is any development of any particular tract of the Unit Area.

17.4 Drilling and/or producing operations performed hereunder upon any tract of Unitized Lands will be accepted and deemed to be performed upon and for the benefit of each and every tract of Unitized Land.

17.5 Suspension of operations and/or production on all Unitized Lands pursuant to direction or consent of the Secretary or his duly authorized representative shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of Unitized Land. A suspension of operations and/or production limited to specified lands shall be applicable only to such lands.

17.6 Subject to the provisions of Article XV hereof and 17.10 of this Article, each lease, sublease, or contract relating to the exploration, drilling, development, or utilization of geothermal resources of lands other than those of the United States committed to this Agreement, is hereby extended beyond any

such term so provided therein so that it shall be continued for and during the term of this Agreement.

17.7 Subject to the lease renewal and the readjustment provision of the Act, any Federal lease committed hereto may, as to the Unitized Lands, be continued for the term so provided therein, or as extended by law. This subsection shall not operate to extend any lease or portion thereof as to lands excluded from the Unit Area by the contraction thereof.

17.8 Each sublease or contract relating to the operations and development of Unitized Substances from lands of the United States committed to this Agreement shall be continued in force and effect for and during the term of the underlying lease.

17.9 Any Federal lease heretofore or hereafter committed to any such unit plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization.

17.10 In the absence of any specific lease provision to the contrary, any lease, other than a Federal lease, having only a portion of its land committed hereto shall be segregated as to the portion committed and the portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. In the event any such lease provides for a lump-sum rental payment, such payment shall be prorated between the portions so segregated in proportion to the acreage of the respective tracts.

17.11 Upon termination of this Agreement, the leases covered hereby may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions of the Act, the lease or leases, and amendments thereto.

ARTICLE XVIII—EFFECTIVE DATE AND TERM

18.1 This Agreement shall become effective upon approval by the Secretary or his duly authorized representative and shall terminate five (5) years from said effective date unless,

(a) Such date of expiration is extended by the Director, or

(b) Unitized Substances are produced or utilized in commercial quantities in which event this Agreement shall continue for so long as Unitized Substances are produced or utilized in commercial quantities, or

(c) This Agreement is terminated prior to the end of said five (5) year period as heretofore provided.

18.2 This Agreement may be terminated at any time by the owners of a majority of the Working Interests, on an acreage basis, with the approval of the Supervisor. Notice of any such approval shall be given by the Unit Operator to all parties hereto.

ARTICLE XIX—APPEARANCES

19.1 Unit Operator shall, after notice to other parties affected, have the right to appear for and on behalf of any and all interests affected hereby before the Department of the Interior, and to appeal from decisions, orders or rulings issued under the regulations of said Department, or to apply for relief from any of said regulations or in any proceedings relative to operations before the Department of the Interior or any other legally constituted authority: *Provided, however, That any interested parties shall also have the right, at its own expenses, to be heard in any such proceeding.*

ARTICLE XX—NO WAIVER OF CERTAIN RIGHTS

20.1 Nothing contained in this Agreement shall be construed as a waiver by any party

hereto of the right to assert any legal or constitutional right or defense pertaining to the validity or invalidity of any law of the State wherein lands subject to this Agreement are located, or of the United States, or regulations issued thereunder, in any way affecting such party or as a waiver by any such party of any right beyond his or its authority to waive.

ARTICLE XXI—UNAVOIDABLE DELAY

21.1 The obligations imposed by this Agreement requiring Unit Operator to commence or continue drilling or to produce or utilize Unitized Substances from any of the land covered by this Agreement, shall be suspended while, but only so long as, Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, Acts of God, Federal or other applicable law, Federal or other authorized governmental agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of Unit Operator, whether similar to matters herein enumerated or not.

21.2 No unit obligation which is suspended under this section shall become due less than thirty (30) days after it has been determined that the suspension is no longer applicable.

21.3 Determination of creditable "Unavoidable Delay" time shall be made by the Unit Operator subject to approval of the Supervisor.

ARTICLE XXII—POSTPONEMENT OF OBLIGATIONS

22.1 Notwithstanding any other provisions of this Agreement, the Director, on his own initiative or upon appropriate justification by Unit Operator, may postpone any obligation established by and under this Agreement to commence or continue drilling or to operate on or produce Unitized Substances from lands covered by this Agreement when in his judgement, circumstances warrant such action.

ARTICLE XXIII—NONDISCRIMINATION

23.1 In connection with the performance of work under this Agreement, the Operator agrees to comply with all of the provisions of section 202 (1) to (7) inclusive, of Executive Order 11246 (30 F.R. 12319), as amended by Executive Order 11375 (32 F.R. 14303), which are hereby incorporated by reference in this Agreement.

ARTICLE XXIV—COUNTERPARTS

24.1 This Agreement may be executed in any number of counterparts no one of which needs to be executed by all parties, or may be ratified or consented to by separate instruments in writing specifically referring hereto, and shall be binding upon all parties who have executed such a counterpart, ratification or consent hereto, with the same force and effect as if all such parties had signed the same document.

ARTICLE XXV—SUBSEQUENT JOINDER

25.1 If the owner of any substantial interest in geothermal resources under a tract within the Unit Area fails or refuses to subscribe or consent to this Agreement, the owner of the Working Interest in that tract may withdraw said tract from this Agreement by written notice delivered to the Supervisor and the Unit Operator prior to the approval of this Agreement by the Supervisor.

25.2 Any geothermal resources interests in lands within the Unit Area not committed hereto prior to approval of this Agreement may thereafter be committed by the owner or owners thereof subscribing or consenting to this Agreement, and, if the interest is a Working Interest, by the owner of such interest also subscribing to the Unit Operating Agreement.

25.3 After operations are commenced hereunder, the right of subsequent joinder, as provided in this Article XXV, by a working interest owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the Unit Operating Agreement. Joinder to the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement, if more than one committed Working Interest Owner is involved, in order for the interest to be regarded as committed to this Unit Agreement.

25.4 After final approval hereof, joinder by a nonworking interest owner must be consented to in writing by the Working Interest Owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such nonworking interest. A nonworking interest may not be committed to this Agreement unless the corresponding Working Interest is committed hereto.

25.5 Except as may otherwise herein be provided, subsequent joinders to this Agreement shall be effective as of the first day of the month following the filing with the Supervisor of duly executed counterparts of all or any papers necessary to establish effective commitment of any tract to this Agreement unless objection to such joinder is duly made within sixty (60) days by the Supervisor.

ARTICLE XXVI—COVENANTS RUN WITH THE LAND

26.1 The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance, of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest.

26.2 No assignment or transfer of any Working Interest or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic, or certified copy of the instrument of transfer.

ARTICLE XXVII—NOTICES

27.1 All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to the party or sent by postpaid registered or certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party may have furnished in writing to party sending the notice, demand or statement.

ARTICLE XXVIII—LOSS OF TITLE

28.1 In the event title to any tract of Unitized Land shall fail and the true owner

cannot be induced to join in this Agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title.

28.2 In the event of a dispute as to title as to any royalty, Working Interest, or other interests subject hereto, payment or delivery on account thereof may be withheld without liability for interest until the dispute is finally settled: *Provided*, That, as to Federal land or leases, no payments of funds due the United States shall be withheld, but such funds shall be deposited as directed by the Supervisor to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

ARTICLE XXIX—TAXES

29.1 The Working Interest Owners shall render and pay for their accounts and the accounts of the owners of nonworking interests all valid taxes on or measured by the Unitized Substances in and under or that may be produced, gathered, and sold or utilized from the land subject to this Agreement after the effective date hereof.

29.2 The Working Interest Owners on each tract may charge a proper proportion of the taxes paid under 29.1 hereof to the owners of nonworking interests in said tract, and may reduce the allocated share of each royalty owner for taxes so paid. No taxes shall be charged to the United States or the State of _____ or to any lessor who has a contract with his lessee which requires the lessee to pay such taxes.

ARTICLE XXX—RELATION OF PARTIES

30.1 It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing in this Agreement contained, expressed, or implied, nor any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

ARTICLE XXXI—SPECIAL FEDERAL LEASE STIPULATIONS AND/OR CONDITIONS

31.1 Nothing in this Agreement shall modify special lease stipulations and/or conditions applicable to lands of the United States. No modification of the conditions necessary to protect the lands or functions of lands under the jurisdiction of any Federal agency is authorized except with prior consent in writing whereby the authorizing official specifies the modification permitted.

In witness whereof, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

Witnesses:	Unit operator (as
-----	unit operator and
-----	as working inter-
Witnesses:	est owner)
-----	-----
-----	By -----
Witnesses:	Working Interest
-----	Owners:
-----	-----
-----	By -----
-----	Other Interest
-----	Owners:
-----	-----
-----	By -----

§ 271.13 Sample form of exhibit A of unit agreement.

EXHIBIT A—BIG VAPOR UNIT AREA, T. 13 N., R. 10 W., M.D.M., California
R. 1 W.

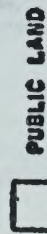
[illegible]

§ 271.14 Sample form of exhibit B of unit agreement.

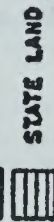
EXHIBIT B—BIG VAPOR UNIT AREA, NAPA COUNTY, CALIF., T. 18 N., R. 10 W.

Tract No.	Description of land	No. of acres	Serial No. and expiration date of lease	Basic royalty and ownership percentage	Lessee of record	Working interest and percentage
Federal land						
1.	Sec. 14: All.	1,890.00	California 38470 July 31, 1982.	United States: All.	Volcanics, Inc.	Volcanics, Inc.: All.
	Sec. 15: All.					
	Sec. 23: Lots 1, 2, 8 1/4, NE 1/4 NW 1/4					
2.	Sec. 35: All.	640.00	39123 July 31, 1982.	do.	D. H. Boller.	Hot Rock Co.: All.
3.	Sec. 21: All.	1,280.00	41346 July 31, 1982.	do.	C. S. Waters—50% D. F. Mann—50% H. C. Pipes	Volcanics, Co.: 50% Hot Rock Co.: 50% Fumarole Ltd.: All.
4.	Sec. 27: All.	1,280.00	41670	do.	Hot Rock Co.	Hot Rock Co.: All.
5.	Sec. 33: All.		71278	do.		
	Sec. 26: All.	961.60	Sept. 31, 1982	do.	H. C. Pipes	Do.
	Sec. 28: 8 1/4		83970	do.		
6.	Sec. 24: All.	965.80	Application.	do.		
	Sec. 25: NW 1/4					
6 Federal tracts 7,017.30 acres or 66.47% of unit area.						
California State land						
7.	Sec. 16: All.	1,280.00	69-67430	State of California: All.	Hot Rock Co.	Hot Rock Co.: All.
	Sec. 36: All.					
1 State tract 1,280.00 acres or 12.49% of unit area.						
Patented land						
8.	Sec. 13: All.	641.20	June 30, 1979	I. B. Hadde: All.	Fumarole, Ltd.	Fumarole, Ltd.: All.
9.	Sec. 22: Lots 1, 2, 3, 4 SW 1/4 NW 1/4	590.00	Feb. 28, 1981	J. P. Smith: All.	do.	Do.
10.	Sec. 34: All.	640.00	Mar. 31, 1981	A. G. Quick: 75% P. T. Land: 25%	Hot Rock Co.	Hot Rock Co.: All.
11.	Tract 39	30.00	Apr. 30, 1981	M. V. Jones: All.	Unleased.	M. V. Jones: All.
3 Patented tracts 1,951.20 acres or 19.04% of unit area.						
Total... 11 tracts 10,249.10 acres in entire unit area.						
§ 271.15 Form of collective bond.						
COLLECTIVE CORPORATE SURETY						
Known all men by these presents, That we, signing as Principal, (Name of Unit Operator)						
do hereby bind ourselves, our heirs, assigns, executors, administrators, successors, and assigns by these presents, to and on behalf of the record owners of unitized substances now or hereafter covered by the unit agreement for this (Name of Unit)						
(Name and address of Surety)						
(Name and address of Surety)						
jointly and severally held and firmly bound unto the United States of America in the sum of Dollars, (Amount of bond)						
lawful money of the United States, for the and (Name of Unit and State)						

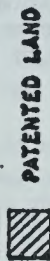
① Means tract number as listed on Exhibit B



PUBLIC LAND



STATE LAND



PATENTED LAND

Whereas said Principal and record owners of unitized substances, pursuant to said unit agreement, have entered into certain covenants and agreements as set forth therein, under which operations are to be conducted; and

Whereas said Principal as Unit Operator has assumed the duties and obligations of the respective owners of unitized substances as defined in said unit agreement; and

Whereas said Principal and surety agree to remain bound in the full amount of the bond for failure to comply with the terms of the unit agreement, and the payment of rentals, minimum royalties, and royalties due under the Federal leases committed to said unit agreement; and

Whereas the Surety hereby waives any right of notice of and agrees that this bond may remain in force and effect notwithstanding:

(a) Any additions to or change in the ownership of the unitized substances herein described.

(b) Any suspension of the drilling or producing requirements or waiver, suspension or reduction of rental or minimum royalty payments or reduction of royalties pursuant to applicable laws or regulations thereunder; and

Whereas said Principal and Surety agree to the payment of compensatory royalty under the regulations of the Interior Department in lieu of drilling necessary offset wells in the event of drianage; and

Whereas nothing herein contained shall preclude the United States from requiring an additional bond at any time when deemed necessary:

Now, therefore, if the said Principal shall faithfully comply with all of the provisions of the above-identified unit agreement and with the terms of the leases committed thereto, then the above obligation is to be of no effect; otherwise to remain in full force and virtue.

Signed, sealed, and delivered this _____ day of _____, 19____, in the presence of:

Witnesses:

(Principal)

(Surety)

§ 271.16 Form of designation of successor unit operator by working interest owners.

Designation of successor Unit Operator _____, Unit Area, County of _____ State of _____, No. _____

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and the owners of

unitized working interest, hereinafter designated as "Second Parties,"

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1970, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein _____ is designated as Unit Operator; and

Whereas said _____ has resigned as such Operator,¹ and the designation of a successor Unit Operator is now required pursuant to the terms thereof; and

Whereas First Party has been and hereby is designated by Second Parties as a Unit Operator, and said First Party desires to assume all the rights, duties, and obligations of Unit Operator under the said unit agreement.

Now, therefore, in consideration of the premises hereinbefore set forth and the promises hereinafter stated, the First Party hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of the _____ unit agreement, and the Second Parties covenant and agree that, effective upon approval of this indenture by the Supervisor, of the Geological Survey, First Party shall be granted the exclusive right and privilege of exercising any and all rights and privileges and Unit Operator, pursuant to the terms and conditions of said unit agreement; said unit agreement being hereby incorporated herein by references and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designating _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor,
U.S. Geological Survey.

§ 271.17 Form of change in unit operator by assignment.

Change in Unit Operator _____ unit Area, County of _____, State of _____, No. _____

¹ Where the designation of a successor Unit Operator is required for any reason other than resignation, such reason shall be substituted for the one stated.

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and _____ hereinafter designated as "Second Party."

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1970, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein the First Party is designated as Unit Operator; and

Whereas the First Party desires to transfer, assign, release, and quitclaim, and the Second Party desires to assume all the rights, duties, and obligations of Unit Operator under the unit agreement; and

Whereas for sufficient and valuable consideration, the receipt whereof is hereby acknowledged, the First Party has transferred, conveyed and assigned all his/its rights under certain operating agreements involving lands within the area set forth in said unit agreement unto the Second Party;

Now, therefore, in consideration of the premises hereinbefore set forth, the First Party does hereby transfer, assign, release, and quitclaim unto Second Party all of First Party's rights, duties and obligations as Unit Operator under said unit agreement; and

Second Party hereby accept this assignment and hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of said unit agreement to the full extent set forth in this assignment, effective upon approval of this indenture by the Supervisor of the Geological Survey; said unit agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designated _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor, U.S.
Geological Survey

Dated: July 18, 1973.

WILLIAM W. LYONS,
Deputy Under Secretary
of the Interior.

[FR Doc.73-15058 Filed 7-20-73;8:45 am]

Comments Received in Response to July 23, 1973, Proposed Regulations for Geothermal Resources Leasing on Public, Acquired, and Withdrawn Lands; Revision of Proposed Rule (and Corrections of August 8, 1973); and July 23, 1973, Proposed Regulations for Geothermal Resources Operations on Public, Acquired, and Withdrawn Lands

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Comments Received in Response to July 23, 1973, Proposed Regulations
for Geothermal Resources Leasing on Public, Acquired and Withdrawn
Lands; Revision of Proposed Rule (and Corrections of August 8, 1973);
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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Washington, D.C. 20250

2820

AUG 1 1973



Mr. Reid Stone
Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Mr. Stone:

This refers to the Federal Register revision of the proposed rulemaking for geothermal resource leasing dated July 23, 1973.

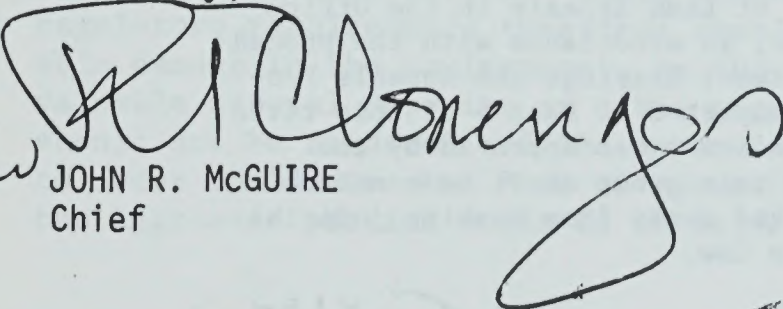
Upon review of the published rules, we found that § 3200.0-6 (b) does not read the same as the final pre-publication draft, which same we concurred in by letter to you of July 10. Apparently the version suggested by Mr. Ferguson at our meeting of June 19 (which all seemed to agree should be rejected in favor of the language worked out earlier by Messrs. Neuberg, Duletsky, and Banta) was inadvertently included in the final copy sent to the Federal Register.

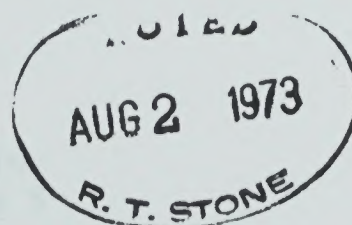
The agreed-upon version reads:

"Prior to the final selection of tracts for leasing, the Director, or the head of the agency charged with administration of the surface, if that officer so elects, shall when appropriate, evaluate fully the potential effect of the leasing program on the total environment...."

Your cooperation in correcting this error will be much appreciated.

Sincerely,

for 
JOHN R. MCGUIRE
Chief





United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS

4015 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22203

August 16, 1973

Memorandum

To: Geothermal Coordinator

From: Frances A. Patton
Special Assistant to the Director

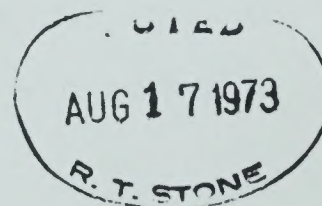
Subject: Revision of proposed rulemaking on Geothermal Resources
leasing (BLM) and operations (GS) on public, acquired
and withdrawn lands, published in 38 FR 19747-19779,
July 23, 1973.

Referring to the subject revision of proposed rules to implement the Geothermal Steam Act of December 24, 1970, 30 U.S.C. §§ 1001-1025 (1970), we offer the following suggestions:

(1) In the first sentence of § 3000.4 Appeals, we suggest that the words "any official action" should be changed to read "a final order" to clarify that only final orders or decisions are appealable, and that the reference to "an Administrative Law Judge" should include a mention of the Office of Hearings and Appeals for adequate identification of such officer, inasmuch as such officers are not so identified by definition or otherwise elsewhere in the regulations. In the second sentence of the same regulation, we suggest that the rules applicable to appeals be referred to as "Department Hearings and Appeals Procedures" as they are referred to in the heading to 43 CFR Part 4, rather than as "rules of practice." Thus, the revised regulation would read:

§ 3000.4 Appeals. Any party to a case who is adversely affected by a final order or decision of an officer of the Bureau of Land Management or of an administrative law judge of the Office of Hearings and Appeals, Office of the Secretary, shall have a right to appeal to the Board of Land Appeals in the Office of Hearings and Appeals, in accordance with the procedures provided in Department Hearings and Appeals Procedures contained in Subpart E of Part 4 of this title, unless such order or decision was approved by the Secretary. Nothing in this group shall be construed to prevent any interested party from seeking judicial review as authorized by law.

A-B 4



(2) In the first line of § 3244.2-1, the reference to § 3245.2-2 should read § 3244.2-2.

(3) In § 3244.3, the three references to the term "hearing examiner" should be changed to "administrative law judge."

(4) Paragraph (e) of § 270.17 should be revised to provide clearly that only final orders or decisions of the supervisor may be appealed in the manner provided in 30 CFR Part 290. We suggest the regulation read as follows:

§ 270.17 Suspension of operations and production.

* * * * *

(e) Appeals from final orders or decisions issued under the regulations in this section shall be made in the manner provided in Part 290 of this chapter.

* * * * *

(5) Included within § 270.80 Noncompliance with regulations or lease terms are provisions which authorize the supervisor to shut down operations where he determines they are unsafe or are causing or can cause pollution and where the lessee fails to perform or commence the necessary remedial action pursuant to a notice of noncompliance with lease or regulatory requirements from the supervisor. We are concerned that shut-down proceedings not involving immediate, serious, or irreparable harm may be viewed as sufficiently similar to lease termination proceedings, in practical effect, as to require the same procedural due process safeguards specified in the law as necessary in termination proceedings. In practical effect upon a lessee, there may be little difference between a shut-down order and a lease termination, and for this reason the power to make shut-down orders immediately effective should be limited to the most serious situations.

We are not suggesting that there can be no shut-down orders, with or without advance notice. Where noncompliance with lease or regulatory requirements threatens immediate, serious, or irreparable damage to the environment, to the leased deposits or other valuable mineral deposits or other resources, advance notice should not be required and the supervisor should have authority to order immediate shut down of operations, despite the fact that the aggrieved parties would be entitled to seek immediate judicial

review of any such immediately effective orders. The reviewing court would determine only whether the circumstances constituted such an immediate threat and therefore whether issuance of the shut-down order was proper, leaving for determination within the Department the issues of noncompliance with lease and regulatory requirements. However, in cases which do not involve circumstances requiring immediate shut down of operations, provisions for hearing and appeal would enable the Department to resolve most disputes involving its shut-down orders without judicial intervention.

Please see in this connection generally comments offered by former Director James M. Day of this Office, in item (3) of his memorandum of June 29, 1973, to the Director of the Geological Survey, on the subject of proposed rulemaking in coal mining operations, 30 CFR Parts 211, 216 (38 FR 10685-10692, April 30, 1973), copy enclosed, suggesting revision of proposed § 211.72 to clarify that mining supervisors' orders to suspend operations for noncompliance with regulations, terms and conditions of the lease or permit, or requirements of an approved exploration or mining plan, will not be operative, pending disposition of appeals, where threat of immediate, serious or irreparable damage to the environment, the mine or resources is not involved.

(6) In view of the establishment of the new Part 290--Appeals Procedures, within Title 30 of the Code of Federal Regulations (38 FR 10000-10004, April 23, 1973), we suggest that § 270.90 Appeals in the subject proposed rulemaking may be revised as follows:

§ 270.90 Appeals. Appeals from final orders or decisions issued under the regulations in this part shall be made in the manner provided in Part 290 of this chapter.

(7) We suggest a revision of § 271.11 similar to that suggested for §270.90 above, to provide clearly that only final orders or decisions under the regulations in Part 271 may be appealed in the manner provided in 30 CFR Part 290.

Enclosure

Frances A. Patton



United States Department of the Interior

OFFICE OF HEARINGS AND APPEALS

4015 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22203

June 29, 1973

Memorandum

To: Director, Geological Survey

From: Director

Subject: Proposed rulemaking, 30 CFR Parts 211, 216, Coal
Mining Operating Regulations (38 FR 10685-10692,
April 30, 1973).

Referring to the subject proposed rulemaking, which updates the coal mining operating regulations in a manner similar to the revision of operating regulations under leases and permits for minerals other than oil, gas and coal, in 30 CFR Part 231, issued by the Department effective July 1, 1972 (37 FR 11039-11045, June 1, 1972) and amended April 23, 1973 (38 FR 10003), we offer the following comments:

(1) Paragraph (b) of § 211.3, providing that the Federal Coal Mine Health and Safety Act of 1969 is applicable to matters concerning the health and safety of miners engaged in mining operations to which the Part 211 regulations apply, should be enlarged to include appropriate reference to the regulations implementing the Act. Perhaps a cross-reference citation would be desirable as well, inasmuch as such regulations are contained in other chapters of Title 30.

(2) To clarify that determinations made by the mining supervisor under paragraph (b) of § 211.4 will be subject to appeal, we suggest that the last sentence of that paragraph be revised to read the same as the like provision contained in § 231.4(b) of the final rulemaking referred to above, namely, as follows: "Where any question arises as to the necessity for or the adequacy of an action to meet the requirements of this paragraph, the determination of the mining supervisor shall be final, subject to the right of appeal as provided in Part 290 of this chapter."

(3) § 211.72 should be rewritten for more orderly presentation of thought and to clarify that mining supervisors' orders to suspend operations for noncompliance with regulations, terms and conditions of the lease or permit, or requirements of an approved exploration or mining plan, will not be operative, pend-

ing disposition of appeals, where threat of immediate, serious or irreparable damage to the environment, the mine or resources is not involved. Existing coal mining operating regulations §§ 211.4, 211.5, and 216.3 so provide, and the preamble to the proposed revision of the regulations does not indicate that a change was intended in this procedure.

Also, the last sentence of paragraph (b) of § 211.72 should be revised to show clearly that it pertains to suspension orders for noncompliance which does not threaten immediate, serious or irreparable damage to the environment, mine, or other resources.

It is our view that the existing procedures in this respect more closely accord with procedural due process than what is proposed. For this reason alone, they should be retained. Moreover, from a policy viewpoint it appears preferable that the Department, rather than the courts, resolve disputes involving shut-down orders through its appellate review system. To the extent that any shut-down orders are made effective, the aggrieved parties may immediately seek judicial review. The enforcement of such orders, therefore, should be limited to cases where there is a threat of immediate, serious or irreparable damage to the environment, mine or resources involved.

Even this limitation may present problems. The concept of procedural due process is constantly expanding. It may be argued that procedural due process requires notice and an opportunity for hearing before an individual is seriously injured by a shut-down order. If, on the other hand, the injury to the environment, mine or resource were sufficiently immediate, serious or irreparable as to outweigh the injury to the lessee, an immediate shut-down order without notice and opportunity for hearing might well be upheld, the shut-down order being analagous to a temporary restraining order. Even in this situation, however, due process might require a right to a hearing within a reasonable time after the shut-down.

Because of the administrative difficulties, delays and expenses inherent in granting lessees the right to a hearing, we do not propose such a radical change. Moreover, the right to appeal, coupled with the authority of the Director or Board to order a hearing (see, e.g., 43 CFP Part 23), might satisfy due process. Anything less might not.

(sgd.) James M. Day



THOMAS L. JUDGE
GOVERNOR

STATE OF MONTANA DEPARTMENT OF INTERGOVERNMENTAL RELATIONS

MAIL TO CAPITOL STATION, HELENA, MT 59601

DIRECTOR'S OFFICE
AERONAUTICS DIVISION
CENTRALIZED SERVICES DIVISION
ECONOMIC OPPORTUNITY DIVISION

406/449-3494
406/449-2506
406/449-3707
406/449-3420

HIGHWAY SAFETY DIVISION
INDIAN AFFAIRS
MUNICIPAL AUDIT DIVISION
PLANNING/ECONOMIC DEVELOPMENT DIVISION

406/449-3412
406/449-2746
406/449-3010
406/449-2400

August 14, 1973

Mr. Reid T. Stone
Geothermal Coordinator
Room 5623
U.S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Stone:

The Division of Planning and Economic Development and the State Clearinghouse have reviewed the revised proposed regulations governing leasing of geothermal resources on public lands. It is the feeling of our Energy Research Assistant that:

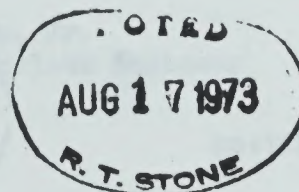
"If the total geothermal resource potential were to be harnessed by industry, it would mean about 2% of the total energy needs for the United States at present energy levels. It becomes apparent that geothermal energy is not a major, usable source to solve the energy problems.

"For the purposes of leasing geothermal resources on public lands, the overriding interest is one of conservation rather than use. Water quality, protection of public interest are perhaps more important than using an energy source which would be insignificant in the total energy picture."

Thank you for the opportunity to review and comment.

Sincerely,

Bert Glueckert
Bert Glueckert
Assistant Planner
Community Development Bureau
Planning & Economic Development
449-3757



BG/jw

A-B 9



ELMO J. DeRICCO
Director

STATE OF NEVADA

ROLAND D. WESTERGARD
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

201 South Fall Street, Carson City, Nevada 89701

In reply refer to
No.

Address All Communications to
the State Engineer, Division
of Water Resources

August 27, 1973

Geothermal Coordinator
Room 5623
U. S. Department of the Interior
Washington, D. C. 20240

Re: Geothermal Regulations for Leasing and Operations

Gentlemen:

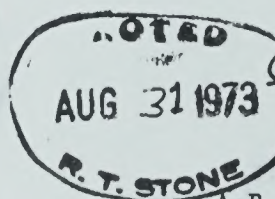
The proposed regulations concerning geothermal resources as outlined in the Federal Register, Vol. 38, No. 140, have been reviewed and the following comments are submitted.

The development of geothermal resources includes the development and use of water resources, whether it is in the form of hot water, brine, or steam. Nevada is a state of limited ground water resources and the development and use of geothermal resources without regard to the rights of ground water users could have significant effect on the economy and development of the state. For this reason, the regulations should require compliance with state water laws as a means of protecting the citizens of the State of Nevada and other ground water dependent states.

In addition to the requirement of obtaining permits for the appropriation of water, the Nevada Water Law provides for the regulation of well drilling as regards the licensing of drillers, filing of well logs, well construction and sealing of wells.

As stated in our letter of December 29, 1972, we are in agreement with the concept of these regulations and only desire that the rights of water users are fully protected. If we may be of further assistance, please contact us.

Sincerely,



Roland D. Westergard
Roland D. Westergard
State Engineer

RDW:gs

A-B 10



DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

ADMINISTRATIVE OFFICE

1069 STATE OFFICE BLDG. • PORTLAND, OREGON • 97201 • Ph. (503) 229-5580

TOM McCALL
GOVERNOR

August 1, 1973

Mr. Reid T. Stone
Geothermal Coordinator
Room 5623
U. S. Dept. of the Interior
Washington, D. C. 20240

Dear Reid:

Thank you very much for the opportunity to review the "Revised Proposed Geothermal Leasing Program Regulations, July 1973". My comments would be much like before; to state that acreage limitations are fairly small and the rules more restrictive than those for petroleum operations on Federal lands. However, more than anything else, we need to open Federal leases to exploration as soon as possible.

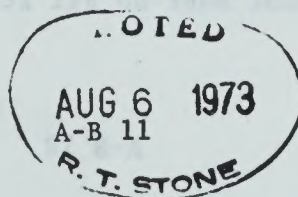
I have two other comments on the present revision, Section 3200-0-5(K) Definitions KGRA; non-competitive leases will be granted on lands where there is no reason to suspect to find geothermal resources. Therefore, there will be no non-competitive leases.

Leasable minerals are defined in Sec. 3000-0-5 and these include hydrocarbons, etc. The rights of the lessee do not appear to be mentioned in the proposed rules so that it is not clear what a geothermal lease grants. Does it also grant right to the minerals mentioned in leasable minerals?

Sincerely,

Vernon C. Newton, Jr.
Geologist - Petroleum Engineer

VCN:bj
cc: Mr. Dick Bowen





DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

1069 STATE OFFICE BLDG. • PORTLAND, OREGON • 97201 • Phone (503) 229-5580

TOM McCALL
GOVERNOR

August 31, 1973

STATE GEOLOGIST
RAYMOND E. CORCORAN

GOVERNING BOARD

R. W. deWEESE
Chairman
Portland

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Bend

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Grants Pass

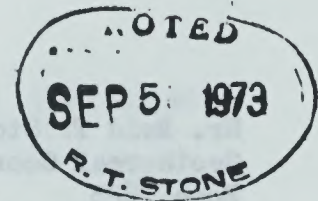
• • •

FIELD OFFICES

2033 First Street
Baker 97814

521 N.E. "E" Street
P.O. Box 417
Grants Pass 97526

Mr. Reid T. Stone
Geothermal Coordinator
U.S. Department of the Interior
Room 5623
Washington, D.C. 20240



Dear Mr. Stone:

I have asked several members of our staff to review the "Revised Proposed Geothermal Leasing Program Regulations - July 1973".

As I have stated before, we are concerned about the built-in delays in almost every part of the rules and regulations - e.g., pre-leasing procedures that require the comments of other bureaus and Federal agencies on the total environment of the area being considered before it can finally be selected as a leasable tract. Also the acreage limitations are far too small and certainly will impose an undue burden on companies doing wildcat drilling outside of known geothermal resource areas.

Section 3205.3-6 imposes a royalty on commercially demineralized water. With the ever-increasing need for potable water in the western states, it seems to us that the Federal Government should provide incentives rather than deterrents in making fresh water supplies available.

The overriding need, however, is to make Federal lands available for geothermal exploration and development. Even though the presently drafted regulations have many defects, the industry can probably work with them for the time being. There has been a considerable amount of discussion and numerous articles written on the geothermal potential in the western states but we will never know how much is really there until the holes can be put down.

We are also entering a plea that the environmental impact statement, which must accompany the rules and regulations, be approved as soon as possible. As you realize, it will do no good to have rules and regulations if the accompanying environmental impact statement is not approved. Almost three years have passed since Congress passed the Geothermal Steam Act and the energy "crunch" is already upon us. The Federal Government must do all it can to alleviate the critical

Mr. Reid T. Stone

Page 2

August 31, 1973

shortage of energy by encouraging exploration and development of all of our energy resources and this certainly includes geothermal steam. The western states are known to have a tremendous potential in this area and we are sure that private industry will proceed vigorously in exploring the Federal lands as soon as they are made available.

Sincerely yours,

R. E. Corcoran

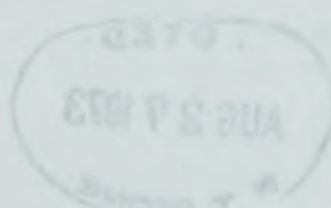
Raymond E. Corcoran
State Geologist

REC:jr

cc Governing Board

cc Portland Ch. of Comm.

Mineral Res. Comm.



A-B 13



STATE OF WASHINGTON

OFFICE OF THE GOVERNOR

OFFICE OF PROGRAM PLANNING AND FISCAL MANAGEMENT

HOUSE OFFICE BUILDING

OLYMPIA, WASHINGTON 98504

WALLACE G. MILLER

DIRECTOR

206-753-5450

DANIEL J. EVANS
GOVERNOR

August 23, 1973

Mr. Reid T. Stone
Geothermal Coordinator
Office of the Secretary
U.S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Stone:

The Washington State response to the revised proposed regulations to govern the leasing of geothermal resources has been prepared by the State Department of Natural Resources and is enclosed. At this time no state agency has been formally assigned responsibility for development of geothermal resources. Proposed legislation would assign this responsibility to the Department of Natural Resources.

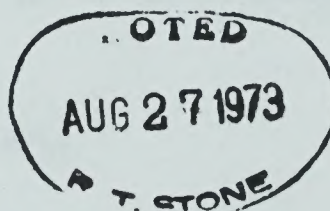
Thank you for the opportunity to comment on the proposed regulations.

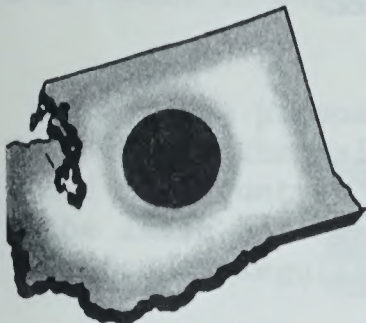
Sincerely,

STATE PLANNING DIVISION

Jerry Parker
Jerry Parker
State Planner

JP:lm
Enclosure





STATE OF WASHINGTON

Department of
Natural Resources

COMMISSIONER
BERT COLE

DON LEE FRASER
SUPERVISOR

OLYMPIA, WASHINGTON

98504

August 21, 1973

MEMORANDUM

TO: Jerry Parker - OPP&FM, Room 105, House Office Building
FROM: Ted Livingston, Supervisor, Geology and Earth Resources Division
SUBJECT: Federal Geothermal Rules

I have plowed through the proposed federal rules for geothermal leasing and find only a couple of things I would question. Under Subpart 3200, Section .0-6 Subsection (b) the Director is charged to evaluate the potential effect of the leasing program on the total environment and if he finds that issuing a lease would be a major action significantly affecting the environment, an environmental impact statement must be prepared. Leasing, of course, has no affect on the environment. I think changing "leasing" to "geothermal operations" so it is parallel with subsection A would clear up the problem.

Part 270 Section 270.41, Pollution, and 270.42, Noise Abatement, should be controlled by local standards and not as approved by the Supervisor. Section 270.76 leaves out local authority also. I think conformance to local zoning ordinances is more important than to broad federal and state guidelines.

VEL:oo

A-B 15

"The Largest Irrigated District in the World"

21

DAVID E. PIERSON
DIRECTOR OF PUBLIC WORKS
COUNTY ROAD COMMISSIONER
COUNTY SURVEYOR
COUNTY ENGINEER

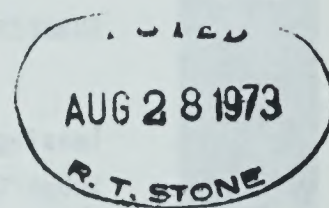
TELEPHONE
714-352-2851



DEPARTMENT OF PUBLIC WORKS
COURTHOUSE
EL CENTRO, CALIFORNIA

August 22, 1973

Reid T. Stone
Geothermal Coordinator
Room 5623
Department of the Interior
Washington D. C. 20240



Dear Mr. Stone:

The County of Imperial has reviewed the proposed rules concerning Geothermal Resources as published in the Federal Register of July 23, 1973.

At various times during the past, we have commented concerning both previous rules and the environmental impact covering the rules and wonder if we have had any effect upon their preparation. We feel it imperative to comment and to receive consideration at this time.

The County of Imperial does, of course, have a vital interest in Geothermal Development since we feel this has tremendous potential for improving the economic base of this County. However, we insist that this development take place without objectionable side effects. We are especially concerned about subsidence and the effect of this subsidence on our irrigation water. In addition, we are concerned with noise, air pollution, water pollution, etc.

The County of Imperial has prepared an Ultimate Land Use Plan for all lands within the County and has prepared an Open Space Element covering the various undeveloped lands in the County. Consistent with these plans, the County of Imperial has also adopted a zoning ordinance which applies to all areas of the County. Accordingly, the County is responsible for what takes place within the County without regard to land ownership. Therefore, operations on Government owned lands by private individuals or corporations should fall under the provisions of the zoning regulations.

An officially appointed Planning Policy Committee consisting of representatives of the Board of Supervisors and the Planning Commission, met to

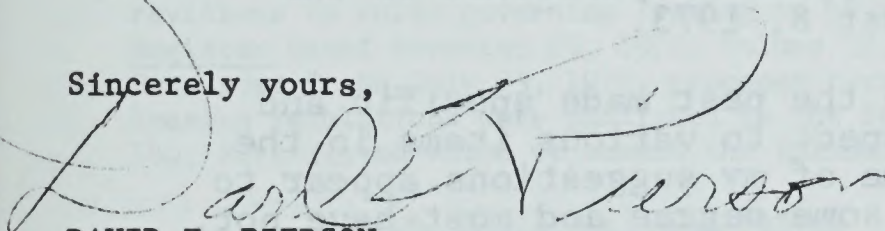
August 22, 1973

review the proposed regulations. They felt that the provisions pertaining to the Geothermal Leases were between the Government and the Lease Holder and the County would not be involved. However, they did feel that once the lease has been consummated, the applicant should be required to abide by County Regulations as well as Federal and State standards.

This Committee has directed me to request that you modify the language of Paragraph 3204.1 to include "Federal, State, and County Standards (where available)" in all places where "Federal and State Standards" are now required. In addition, it is requested that Section 270 be revised to include the requirement for the applicant to satisfy all local zoning regulations (where applicable) prior to drilling or commencing other operations. By so doing, you will allow the Government Agency closest to the source to monitor operations and to insure proper development.

It is requested that you make these changes in your proposed rules for Geothermal Leasing and operations. Irregardless of your action, the County of Imperial intends to enforce zoning regulations throughout the County. Individuals and companies drilling geothermal wells without a permit from this County, could be prosecuted for violation of the County Zoning and Geothermal Ordinances.

Sincerely yours,



DAVID E. PIERSON
Director of Public Works

cd

JOSEPH W. AIDLIN

ATTORNEY AT LAW

5143 SUNSET BOULEVARD

LOS ANGELES, CALIFORNIA 90027

(213) 666-1910

August 21, 1973

Mr. Reid T. Stone
Geothermal Coordinator
Interior Building, Room 7000
Department of the Interior
Washington, D. C. 20240

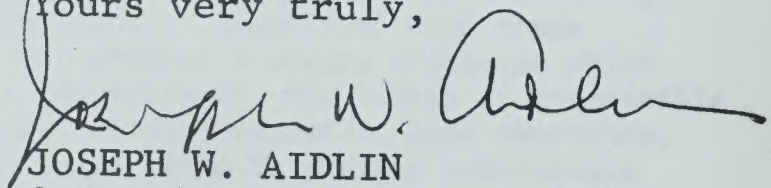
Dear Sir:

I have reviewed the revised proposed regulations covering geothermal resources published in the "Federal Register" of July 23, 1973 and the supplement published in the "Federal Register" of August 8, 1973.

I have at various times in the past made specific and detailed comments with respect to various items in the proposed regulations. Some of my suggestions appear to have been incorporated to some degree and most have not. I have concluded that it would be best at this time to facilitate adoption of the regulations without further delay, although there are provisions and omissions which I feel will require amendment at a later date, but such amendment can be accomplished after adoption of the proposed regulations and after more experience is gained by all persons and agencies concerned.

I am, therefore, foregoing making any specific comments on particular provisions of the proposed regulations, and I urge instead that they be adopted as proposed.

Yours very truly,



JOSEPH W. AIDLIN
General Counsel
MAGMA POWER COMPANY

JWA/mcm

AUG 23 1973

R. T. STONE

AMERICAN PETROLEUM

1801 K STREET, NORTHWEST

INSTITUTE

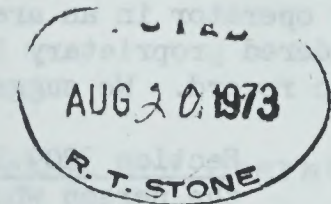
WASHINGTON, D.C. 20006

(202) 833-5580

Frank N. Ikard
PRESIDENT

August 17, 1973

Mr. Reid Stone
Geothermal Coordinator
U.S. Department of the Interior
Washington, D. C. 20240



Dear Sir:

The American Petroleum Institute is a voluntary non-profit organization representative of the petroleum industry throughout the United States. Current membership approximates 8,000 individuals and 350 companies. Members are engaged in all facets of the petroleum industry, including exploration, production, transportation, refining and marketing of petroleum and its products. The views expressed below were developed by the Committee on Exploration of the American Petroleum Institute.

On January 15, 1973, we wrote you concerning several of the proposed revisions to rules governing leasing on public lands published in the Federal Register dated November 29, 1972, Volume 37, Number 230, Part II, "Geothermal Resources." On July 23, 1973, proposed revisions to geothermal resource leasing regulations were published in the Federal Register, Volume 38, Number 140, Part II, on which we submit the following comments:

Section 3209.1-1(a) Application

In our opinion this section should read as follows:

(a) Forms and where filed. Any person desiring to conduct geothermal resources exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file with the authorized officer for the district in which the public lands are located a Notice of Intent on a form approved by the Director.

While the terms of the requirements to be met by the operators under this section are not onerous, the new requirement that the Notice of Intent be approved by an official presupposes possible disapproval by him. Such intent is indicated in Section 3209.1-2 Review of Nature of Intent. It does not seem in the public interest in this time of impending energy shortage to discourage exploration for energy materials on the public domain, especially geothermal steam which is an "environmentally clean" resource. With the authority to approve or disapprove without appeal, the local official could be placed under considerable pressure to deny a "permit" regardless of merit. Delays would be encountered under such a procedure even if the "permit" were

granted ultimately. Weather conditions in many public domain lands, notably Alaska, make time a vital factor in exploration activities, and delays are expensive under any conditions.

We think Section 3209.1-1(b)(1) requiring disclosure " ... of the person, association or corporation for whom the operation will be conducted ..." should be changed and this information kept confidential and that the "Intent" form should so indicate. The oil business is extremely competitive and general dissemination of this type of information would negate the advantage that an astute operator would have if he were the first or even an early operator in an area. Where an operator or company is working is considered proprietary information and as such should not be a matter of public record. We suggest the following wording:

Section 3209.1-1(b)(1) The name, address, and zip code of the person who will be in charge of actual exploration activities. The name, address, and zip code of the person, association, or corporation for whom the operations will be conducted will be furnished on request, on a confidential basis, to the authorized officer of the Bureau of Land Management for the district in which the public lands affected are located.

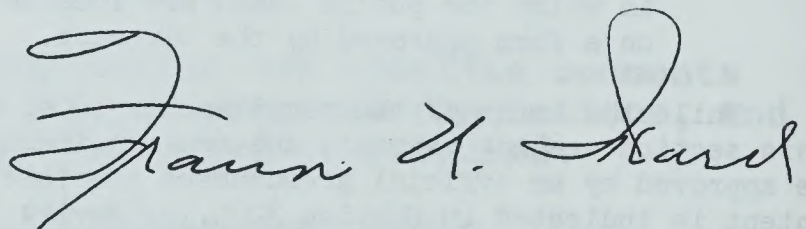
Section 3209.1-2 Review of Notice of Intent

This section, in our opinion, would not be needed if Section 3209.1-1 is amended as suggested.

Section 3209.2 Exploration operations

We feel this section is unduly restrictive. For example, there is a possibility that an individual or company representative would want to drive through or fly over public lands in order to make an initial determination if further exploration would be warranted. We recommend Section 3209.2 be deleted.

Sincerely,

A handwritten signature in cursive script, appearing to read "Frank A. Hard". The signature is written in dark ink and is positioned below the "Sincerely," text.

G. M. ANDREFF
235 ROCKHILL DRIVE
SAN ANTONIO, TEXAS 78209

August 17, 1973

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Ref: Proposed Rules Geothermal Resources Leasing and Operation

Dear Sir:

By letter dated September 20, 1971 on the letter head of Birchan Corporation, I registered my objection to the original set of Rules and Regulations proposed by the Bureau of Land Management (BLM) for geothermal energy and offered a series of suggestions for change. The primary point of my original objection was that the procedures established by the Rules and Regulations did not assure the investor in an approved exploratory program on "non-competitive" federal acreage that he could acquire a lease on any potential geothermal resource area his exploratory program may find. Although couched in new words and in a new way, the Rules and Regulations as now proposed have the same effect and the availability of geothermal leases on a non-competitive basis becomes a myth despite the intent of Congress and provisions of the Geothermal Steam Law enacted in December 1970. My original objection holds.

In the Senate hearings on the Geothermal Steam Act, the announced policy of the BLM was to achieve 100% competitive bidding for leases on all federal lands. Despite the fact the apparent intent of Congress and the President in enacting the Geothermal Steam Law was to provide an opportunity to acquire a federal geothermal lease on a non-competitive basis, the Department of the Interior, through the BLM and by the promulgation of the Rules and Regulations, has deliberately created a procedure wherein no one could hope to acquire a federal geothermal lease of even minimum merit on a non-competitive basis. As now written, the Rules allow the BLM to utilize, among other things, the data from the NASA Earth Resources Program as a technical basis for withdrawing acreage from a non-competitive status and in the event that a technical

A-B 21

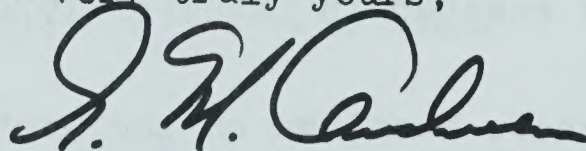
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reason cannot be conjured up the Bureau can change the classification of any area, at any time, for any reason during the period of time between the filing of an application for a lease and the issuance of the lease.

The "competitive bidding" policy of the Dept. of the Interior does nothing but increase the cost of natural resources found and in turn increases the cost to the consumer. This policy persists despite history which shows that competitive bidding financially eliminates small companies and has a deleterious effect on exploration, development and ultimate recovery of resources. There are other ways of achieving the benefits ascribed to "competitive bidding" without imposing the economic burden directly on industry and indirectly on the consumer.

The fallacies of the Dept. of the Interior's policy on this matter are clearly pointed out in the testimony given before Senator Allen Bible's Committee that sponsored the Geothermal Steam Act. That Congress did not subscribe to the Department's policy is evident in the wording of the Geothermal Steam Law and if the effect of the Proposed Rules is as I have stated, it is "directly against the intent of Congress" as quoted from Senator Bible's letter to Secretary Morton in reference to my original objection.

Very truly yours,



G. M. Andreen

GMA:bls

cc: Senator Bible
Senator Jackson
Senator Tower

AUSTRAL OIL COMPANY
INCORPORATED

(713) 228-9461
cable-AUSTROIL

2700 Humble Building

Houston, Texas 77002

July 30, 1973

The Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Re: Proposed Rules for Leasing
Federal Lands for Geothermal
Resources

Dear Sir:

Reference is made to the Department of Interior, Bureau of Land Management's issuance of proposed leasing procedures dated Monday, July 23, 1973 concerning geothermal resources. This release solicited comments and suggestions concerning the regulations issued on the above date.

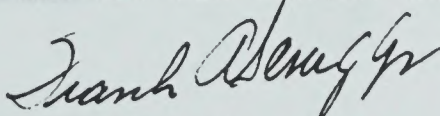
§3220.3 Publication of Notice of Lease Sale. This paragraph refers to the notice of publication of proposed lease sales on geothermal resources in a Known Geothermal Resource Area. We believe in addition to the notice provided for in this paragraph the Department should consider listing the areas to be leased in a similar fashion used in notifying the industry of lease sales in the Outer Continental Shelf and notices for acreage available for filing. We believe the mailing list issued by the Oil and Gas Division for these notices could be utilized in this instance.

We believe the broader coverage of companies and individuals reached in this manner would be beneficial to the Department of Interior in their leasing efforts.

Your consideration of this suggestion is sincerely requested.

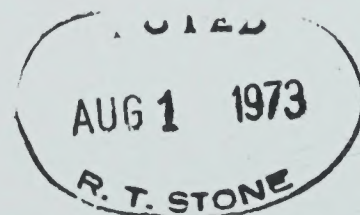
Yours very truly,

AUSTRAL OIL COMPANY INCORPORATED



Frank A. Scruggs
Vice President

FAS:fs



R. W. BECK AND ASSOCIATES

ANALYTICAL AND CONSULTING ENGINEERS

PLANNING
DESIGN
RATES
ANALYSES
EVALUATIONS
MANAGEMENT

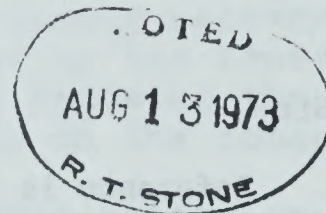
400 PRUDENTIAL PLAZA
DENVER, COLORADO 80202
TELEPHONE 303-292-0270

SEATTLE, WASHINGTON
DENVER, COLORADO
PHOENIX, ARIZONA
ORLANDO, FLORIDA
COLUMBUS, NEBRASKA
BOSTON, MASSACHUSETTS

FILE NO. GG-0000-AE-GA
906.09

August 9, 1973

Mr. Reid T. Stone
Geothermal Coordinator
Room 5623
U. S. Department of the Interior
Washington, D. C. 20240



Dear Mr. Stone:

Thanks for favoring us with the Revised Proposed Geothermal Leasing Program Regulations. Please keep us on the mailing list for geothermal information releases.

On page 19766 of the July 23, 1973 Federal Register we suggest that under Section 270.2 (c) "Lessee" be expanded to cover "districts" and "authorities". We can foresee that power districts, conservancy districts and irrigation districts may be participating in geothermal programs. Likewise, several of the states now have "power authorities" that may be participating in this program.

Under Section 270.2 (j) (4), what is meant by the word "transmission"? Does this mean transmission of "steam energy" or "electric energy" or both?

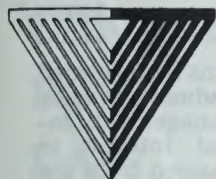
Very truly yours,

R. W. BECK AND ASSOCIATES

By W. E. Trommershausen
W. E. Trommershausen
Chief Consulting Engineer

WET:lm

A-B 24



California State University, San Diego

5402 COLLEGE AVENUE / SAN DIEGO, CALIFORNIA 92115

COLLEGE OF SCIENCES
Department of Geology

August 10, 1973

Mr. Reid T. Stone
Geothermal Coordinator
Room 5623
U. S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Stone:

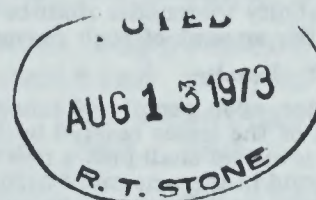
On page 19757 of the July 23, 1973 Federal Register there appears to be a basic inconsistency in Subpart 3209.0-5. Under (a) it is stated that "Exploration operations" does not include the casual use of public lands and that the regulations of this Subpart are not intended to prevent drilling operations necessary for placing explosive charges for seismic exploration. Under (d) of the same Subpart however activities which do not involve use of heavy equipment or explosives.... are defined as "casual use." Either part (a) or (d) should be changed for the way they now read, the drilling of shot holes is permitted however they can't be used. To me this seems a strange partitioning.

Respectfully,

Robert B. McEuen
Professor of Geology
714-286-5593/5586

RBMc:kj

Enclosure: p. 19757 Federal Register



A-B 25

§ 3206.2 Termination of period of liability.

The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled.

§ 3206.3 Operators bond.

An operator, or, if there are more than one for different portions of the lease, each operator, shall furnish a corporate surety bond or bonds in an amount prescribed by the Supervisor.

§ 3206.4 Qualified corporate sureties.

Treasury lists. A list of companies holding certificates of authority from the Secretary of the Treasury under the Act of July 30, 1947 (6 U.S.C. 6-13), as acceptable sureties on Federal bonds is published in the FEDERAL REGISTER annually.

§ 3206.5 Nationwide bond.

In lieu of bonds required under any of the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements may furnish a bond in an amount of which must be not less than for \$150,000 for full nationwide coverage for all geothermal leases.

§ 3206.6 Statewide bond.

In lieu of any of the bonds required by the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements, may furnish a statewide bond, applicable to the State in which the leases are situated, the amount of which must be at the rate of not less than \$50,000 for each unit of coverage.

§ 3206.7 Default.

§ 3206.7-1 Payment by surety.

Where upon a default the surety makes payment to the Government of any indebtedness due under a lease, the face amount of the surety bond and the surety's liability thereunder shall be reduced by the amount of such payment.

§ 3206.7-2 Penalty.

Thereafter, upon penalty of cancellation of all of the leases covered by that bond, the principal shall post a new nationwide bond in the amount of \$150,000 or a unit bond, as the case may be, within 6 months after notice, or within such shorter period as the authorized officer may fix. However, in lieu thereof, the principal may within that time file separate bonds for each lease.

§ 3206.8 Applicability of provisions to existing bonds.

The provisions of these regulations may be made applicable to any oil and gas nationwide or statewide bond in force at the effective date of these regulations by filing in the proper BLM of-

fice a written consent to that effect and an agreement to be bound by the provisions hereof executed by the principal and the surety. Upon receipt thereof the bond will be deemed to be subject to the provisions of these regulations.

Subpart 3207—[Reserved]

Subpart 3208—[Reserved]

Subpart 3209—Geothermal Resources Exploration Operations

§ 3209.0-1 Purposes.

(a) The purpose of the regulations in this Subpart 3209 is to establish procedures to be followed in conducting exploration operations on the public land for geothermal resources. The regulations in this subpart are not applicable to exploration operations conducted pursuant to a geothermal resources lease.

(b) The rights obtained under this subpart do not include an exclusive right to prospect for geothermal resources on the land described in a Notice of Intent or any preference right to a geothermal resources lease.

§ 3209.0-2 Objectives.

The objectives of the regulations in this Subpart 3209 are to encourage exploration of the public lands for geothermal resources in a manner that is consistent with the management policy set forth in § 1725.3 of this chapter. No exploration operations will be allowed if the authorized officer determines that such exploration operations would be inconsistent with that policy. The authorized officer may suspend or terminate exploration operations upon due notice to the operator at any time if he determines that there is non-compliance with the terms and conditions of the notice of intent.

§ 3209.0-5 Definitions.

As used in this subpart:

(a) "Exploration operations" means any activity relating to the search for evidence of geothermal resources which requires physical presence upon public lands and which may result in damage to public lands or resources thereon. It includes, but is not limited to, geophysical operations, drilling of shallow temperature gradient wells, construction of roads and trails, and cross-country transit by vehicle over public lands. It does not include the casual use of public lands for geothermal resources exploration. It does not include core drilling for subsurface geologic information, except drilling of shallow temperature gradient wells, or drilling for geothermal resources; these activities will be authorized only by the issuance of a geothermal resources lease. The regulations in this Subpart, however, are not intended to prevent drilling operations necessary for placing explosive charges for seismic exploration, nor do they affect the exclusive right of a lessee to drill for geothermal resources upon the land subject to his lease.

(b) "Notice of Intent" means a "Notice of Intent and Permit to Conduct Exploration Operations (Geothermal Resources)."

(c) "Public lands" means lands owned by the United States and administered by the Bureau of Land Management, including retained mineral interest in lands, title to which has passed from the United States.

(d) "Casual use" means activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources, and improvements. For example, activities which do not involve use of heavy equipment or explosives and which do not involve vehicle movement except over established roads and trails are "casual use."

§ 3209.1 Notice of intent and permit to conduct exploration operations (Geothermal Resources).

§ 3209.1-1 Application.

(a) *Forms and where filed.* Any persons desiring to conduct exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file for approval with the authorized officer for the district in which the public lands are located a Notice of Intent on a form approved by the Director.

(b) *Requirements.* The Notice of Intent will contain the following:

(1) The name and address, including zip code, both of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities;

(2) A statement that the signers agree that exploration operations will be conducted pursuant to the terms and conditions listed on the approved form;

(3) A brief description of the type of operations which will be undertaken;

(4) A description of the lands to be explored by township;

(5) A map or maps, available from state or Federal sources, showing the lands to be entered or disturbed by the proposed exploration operations; and

(6) The approximate dates of the commencement and termination of exploration operations.

§ 3209.1-2 Review of Notice of Intent.

The authorized officer will either approve or disapprove a Notice of Intent as promptly as practicable, but in any event within 30 calendar days after the date of the filing of the Notice of Intent. If the authorized officer shall disapprove a Notice of Intent, he shall explain in writing to the applicant the reasons for disapproval.

§ 3209.2 Exploration operations.

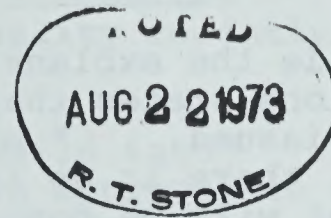
No exploration operations will be conducted on public lands except pursuant to the terms of a Notice of Intent which has been approved by the authorized officer.

§ 3209.3 Completion of operations.

Upon completion of the exploratory operations, there shall be filed with the authorized officer a "Notice of Completion of Exploration Operations." Within 90 days after the filing of such "Notice of Completion," the authorized officer shall notify the party who had conducted

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Charles R. Halpern
Benjamin W. Heineman, Jr.
Margaret A. Kohn •
Alix H. Sanders ••
Lawrence H. Schwartz

August 22, 1973

Mr. Reid Stone
Geothermal Coordinator
Room 5623
United States Department of the
Interior
Washington, D. C. 20240

Revised Proposed Geothermal Leasing
Program Regulations (38 Fed. Reg.
19748-19779, July 23, 1973).

Dear Mr. Stone:

These comments are submitted on behalf of the Sierra Club in response to the above-referenced revisions of proposed leasing, operating and unit plan regulations designed to implement the Geothermal Steam Act of 1970.*/(the "Proposed Regulations"). These comments supplement comments and recommendations previously submitted to you with respect to the regulations proposed by the Department of Interior ("DOI") on November 29, 1972 (37 Fed. Reg. 25282-97), May 3, 1972 (37 Fed. Reg. 8994-9002), and July 23, 1971 (36 Fed. Reg. 13722-40), as well as with respect to the Draft Environmental Impact Statement for the Geothermal Leasing Program, dated September 1971, and the Supplement thereto, dated May 1972. (hereafter referred to collectively as the "DEIS").

*/ 30 U.S.C. §§1001-1025.

I. Preliminary Comments

A. Comment Period on Proposed Regulations

While the explanatory note accompanying the proposed regulations states that a "Final Environmental Statement will be issued. . ." prior to promulgation of final regulations, there is no indication that comments on such Statement will be considered in formulating final regulations and the Sierra Club, like other interested persons, is being asked to comment on revisions of proposed regulations without the benefit of a revised environmental impact statement relating thereto. The Sierra Club has repeatedly objected to this bifurcated procedure as contrary to the purposes of the National Environmental Policy Act of 1969.*/ ("NEPA"). In our view, proposed regulations should be issued contemporaneously with the related impact statement and the comment periods for these materials should be identical. We therefore urge you to issue an appropriate notice in the Federal Register providing that interested parties may submit comments on the proposed regulations during the comment period established for any revised environmental impact statement relating thereto, and that such comments will be considered in formulating final regulations.

B. New Draft Environmental Impact Statement

As you know, NEPA requires a "detailed statement" of the environmental impact of major Federal actions and of alternatives to proposed actions. The impact statement is not simply a paper requirement; it is intended to influence decisionmaking. The requirements of NEPA--particularly the impact statement requirement in Section 102(2)(C)--are designed to ensure that decisionmakers are informed of "the full range of responsible opinion" regarding proposed Federal actions, Citizens for Nuclear Responsibility, Inc. v. Seaborg, 1 ELR 20469, 20470 (D.C. Cir. 1971) so that they may "include all possible environmental factors in the decisional equation." Calvert Cliffs' Coordinating Committee v. AEC, 449 F.2d 1111, 1113; Council on

*/ 42 U.S.C. §§4321 et seq.

Environmental Quality, Guidelines on Preparation of Environmental Impact Statements, §1500.1 (38 Fed. Reg. 20550 [Aug. 1, 1973]) ("CEQ Guidelines"). As the President's Council on Environmental Quality recently pointed out:

"[NEPA]. . . requires agencies to build into their decisionmaking process. . . an appropriate and careful consideration of the environmental aspects of proposed action. . . ." Ibid.

The principle means established by the CEQ Guidelines for achieving NEPA's objective of fully informed, environmentally sound decisionmaking is the preparation and circulation for comment of draft impact statements. CEQ Guidelines, supra at §1500.7(a).

In order for a draft statement and the mandated consultative process to provide an adequate basis for preparation of a final impact statement--which is the prime decisional document--the draft statement must meet NEPA's requirement of a full and detailed analysis of the proposed action and alternatives thereto. The Sierra Club in prior comments expressed the view that the DEIS is inadequate under NEPA and requested DOI to issue and circulate for comment a new draft impact statement.*/ We take this opportunity to urge DOI once again to provide a new draft impact statement for the geothermal leasing program, as well as the three areas in California under consideration for leasing.

Even assuming arguendo that the DEIS was adequate when prepared, there are strong reasons for issuance of a new draft impact statement prior to final formulation of a geothermal resources development program. Almost two years have passed since initial issuance of the DEIS and thirteen months have passed since it was supplemented. During this time, considerable new information relevant to the environmental implications of geothermal resource development has become available and several events have occurred that bear

*/ E.g., letter of R. M. Hallman to Reid Stone, dated 11/22/71.

directly on assessment of alternatives to such development. For example, United States energy policies have undergone reexamination and change, see e.g., 1973 Energy Messages of the President;*/ the potential of and problems associated with geothermal resource development have undergone intensive analysis by Congress, the Federal Council for Science and Technology, the National Science Foundation and others; technological developments have been disclosed which indicate possibilities for (a) utilization of geothermal energy without removal of steam or fluid from subsurface zones, i.e., heat exchanger systems,**/ and (b) utilization of dry geothermal energy, e.g., hot dry rock systems; and, additional on-site investigation has been done by DOI regarding the environmental implications of geothermal resource development in the areas under consideration for leasing in California.

These few examples cited above indicate clearly that significant new developments and information have occurred since issuance of the DEIS which warrant evaluation and consideration in assessing the environmental implications of geothermal resource development, as well as alternatives thereto, and should give rise to very considerable revisions in the upcoming environmental impact statement. In such circumstances, the CEQ Guidelines contemplate new or supplemental draft impact statements and recirculation thereof for comment. See CEQ Guidelines, supra at §1500.11(b). And, the courts have indicated that NEPA's requirement for full and effective consideration of significant new information or developments can only be met by requiring review of and comment thereon by appropriate governmental officials and the public. See Natural Resources Defense Council v. Morton, 337 F.Supp. 110 (D.D.C. 1972); Sierra Club v. Froehlke, 5 ERC 1033, 1096 (S.D. Tex. 1973).

*/ Among the most relevant changes in energy policy are: modification of oil import program; proposed deregulation of natural gas pricing; acceleration of offshore oil and gas development; proposed development of deepwater ports; expanded energy conservation measures.

**/ Such systems may substantially reduce risks of land subsidence and seismic activity, and thus bear directly on the environmental implications of geothermal resource development.

In sum, to develop credibility on this controversial environmental-energy policy issue and to fulfill NEPA's requirements, DOI must make certain that final decisions regarding implementation of the Geothermal Steam Act of 1970 fully take into account all currently available data, studies and technologies, as well as current energy policies, and the views of interested governmental officials and members of the public with respect thereto. The President in his Energy Message of April 18, 1973 declared that geothermal resource leasing will not go forward unless it can "proceed in an environmentally acceptable manner. . . ." Issuance and circulation for comment of a new draft impact statement is necessary to fulfill this stated objective.

We of course recognize the desire to avoid unnecessary delay in taking final action on proposed federal programs, including implementation of the Geothermal Steam Act of 1970. However, judging from past experience, it appears that geothermal resource development is likely to proceed relatively slowly in the near future owing in substantial part to economic, technological and resource potential uncertainties; if developed, such resources are likely to supplement, not supplant, other energy sources; and, substantial time has already elapsed since passage of the Act. It, therefore, cannot be argued persuasively that the few additional months required to comply with the NEPA review process through issuance of a new draft statement would seriously impair the proposed program or efforts to meet energy needs. In any event, given the very substantial period of time since issuance of the DEIS, the new significant developments since such issuance which warrant the Secretary's consideration, the substantial revisions likely to occur in the DEIS, and the serious shortcomings of the DEIS, we believe that a new draft impact statement is necessary to ensure sound environmental decisionmaking and would not create an unfavorable precedent under NEPA.

II. Comments on Proposed Regulations

The proposed regulations fail in substantial part to reflect the prior comments and recommendations of the Sierra

Club and, thus, are unacceptable. For example, they do not require public input and hearings with respect to area or tract selections for leasing and establishment of environmental protection requirements; they do not require compliance with local environmental standards; they do not exclude a wide variety of environmentally and ecologically sensitive areas from leasing; and they delegate environmental regulation to supervisors in the field.

The Sierra Club does, however, generally support certain revisions in the proposed regulations which appear to strengthen them from an environmental standpoint. These revisions include the requirement for full evaluation of potential environmental effects of specific leasing programs prior to final tract selection [§3200.0-6(b)]; the requirements for lessees to submit reports detailing environmental damage resulting from their operations [§3204.1(j)] and compliance with environmental protection requirements (§270.76); the requirement that supervisors shall consult with and receive comments from interested governmental officials and members of the public prior to issuing operational orders or approving plans of operation or development (§270.11); the requirement for lessees to report environmental damage or failure to comply with environmental standards to supervisors [§270.30(c)]; the requirement for proposed plans of operation to include methods for protection of the environment, as well as provisions for monitoring, and collection of environmental baseline data [§270.34(e), (g), (h)]; the requirement for detailed plans regarding abandonment of wells to provide for preservation of fresh water aquifers and for prevention of intrusion into such aquifers of saline or polluted waters (§270.45); and, the requirement for monthly operations reports to include dates and results of any tests or environmental monitoring conducted [§270.74(e)].

Further, the Sierra Club believes there are several ways in which the above-mentioned revisions could be improved. First, Section 3200.0-6(b) provides expressly that an environmental impact statement under §102(2)(C) of NEPA will be prepared where "issuance of leases in an area" selected for leasing would be a major federal action significantly affecting the quality of the human environment.

On the other hand, Section 3200.0-6(a) (which deals with initial consideration of areas for leasing, as opposed to selection of specific tracts within areas for lease) mandates an assessment of the potential effect of geothermal resource development on the total environment of the area, but does not specifically refer to preparation of an impact statement under NEPA. Thus, it is possible to infer that the proposed regulations contemplate preparation of environmental impact statements under NEPA with respect to tract selection but not as to area selection. Such an approach does not appear justified and, indeed, would be inconsistent with the approach adopted by DOI in the DEIS which includes separate environmental analyses of three areas within the state of California now being considered for leasing. In our view, NEPA applies to both kinds of action, i.e., selection of areas for leasing, and selection of specific tracts within areas for lease, and the proposed regulations should expressly provide for compliance with NEPA in both situations.*/

The proposed regulations should also expressly provide for assessment of environmental impacts and compliance with NEPA in connection with evaluation of use permits under Section 3200.0-8. And, where electric power generation is involved, the proposed regulations should require the producer to sell power at non-discriminatory rates which are based on full marginal cost pricing, including all environmental and social costs associated with energy supply, and which discourage wasteful and encourage efficient energy utilization.

We further recommend that the regulations specifically require the decisionmaker to prepare a written statement of reasons in support of any decision that a specific tract selection or use permit does not require an environmental impact statement and to provide prompt notice, as well as a

*/ We do not mean to imply by this discussion any change in our previously expressed view that preparation of environmental impact statements for area selection and grant of leases should be expressly required in the regulations, not left to the discretion of agency officials.

copy, of the decision and statement of reasons to interested governmental agencies and the public.*/ As the United States Court of Appeals for the District of Columbia has recently pointed out: "The minimum requirement for compliance with the 'action-forcing' provisions of NEPA is for the agency to supply a statement of reasons why it believes that an impact statement is unnecessary." Arizona Public Service Co. v. FPC, 5 ERC 1619, 1623 (D.C. Cir. 1973).

Section 3204.1(j) requires the lessee to submit semi-annual reports on compliance with environmental protection requirements specified in subparagraphs (b)-(i) thereof and "on any significant environmental damage suffered by the lands subject to his lease." This section also provides that its reporting requirements will be fulfilled by the annual report required under Section 270.76 once operations actually commence. We believe this reporting procedure is inadequate. First, the Section 270.76 report only covers actions taken to comply with applicable environmental regulations; it does not call for information on environmental damage caused by lease operations. Thus, the Section 270.76 report omits important information required under the Section 3204.1(j) report.

Second, the damage information required under Section 3204.1(j) is limited to damage suffered by "lands subject to" lease, thereby excluding damage to the surrounding area and, perhaps, subsurface areas. There is no justification for excluding such damage and, indeed, the narrow concept of damage in Section 3204.1(j) is inconsistent with the general obligations of lessees to prevent damage from operations wherever it occurs. E.g., Section 270.30(b).

Third, the reporting period specified in both sections is too long. Annual or semi-annual reports are inadequate to provide the prompt knowledge and assessment of environmental problems necessary to achieve the objective of full and effective environmental protection.

*/ A substantially similar requirement has been incorporated by the Geological Survey in its regulations regarding preparation of environmental impact statements under NEPA. 37 Fed. Reg. 5263 (March 11, 1972).

We recommend that Section 3204.1(j) and 270.76 be revised to require identical quarterly reports giving full accounts of (a) actions taken to comply with appropriate federal and state requirements or regulations, and requirements of the supervisor pertaining to protection of the total environment; and (b) any significant environmental pollution or damage resulting from the lessee's operations. The non-inclusive enumeration of matters to be covered by reports contained in Section 270.76 should be retained.

Section 270.30(c) requires a lessee to report significant effects on the environment created by his operations or failure to comply with environmental standards to the supervisor within 24 hours and to confirm any such matter in writing within 30 days. We believe that the lessee should be required to confirm these matters in writing as soon as possible, but no later than 14 days after such event occurs. If the supervisor and other interested parties are to take effective action to deal with matters under consideration, all information relating thereto and confirmation thereof should be received as soon as possible. Two weeks should provide ample time for the lessee to assess the matter and prepare a written confirmation.

Section 270.34(h) requires a lessee to compile certain data concerning environmental aspects of "the leased lands" prior to submitting a plan for production. Since the operations of the lessee may affect the environment of areas surrounding the leased lands, as well as the lands themselves, the lessee should be required to compile environmental baseline data for surrounding areas. As noted above, the lessee is obliged to prevent pollution or damage to the environment and natural resources (whether on leased lands or elsewhere) from his operations and the supervisor is charged with enforcing this obligation. It is thus appropriate to require development of environmental baseline data for areas likely to be affected by the lessee's operations whether or not located on the leased lands.

Section 270.48 authorizes the supervisor to grant variances from regulatory requirements when necessary, inter alia, to protect human health and safety, or the

environment, and requires him to inform other federal and state agencies of such variances. The supervisor should also be required to consult with and obtain comments from interested governmental officials, as well as interested members of the public, prior to granting any variance. Such a requirement would be consistent with the obligation imposed upon the supervisor in Section 270.11 to consult with and receive comments from federal and state agencies and other interested parties prior to issuing regulations and approving plans of operations or development.

Section 270.11 refers to approval by the supervisor of "plans of operations" and "plans of development". Section 270.34(h) refers to approval of "plan for production". Presumably, the phrases "plan of development" and "plan for production" are intended to cover the same type of activities. To prevent confusion, one phrase or the other should be utilized in Sections 270.11 and 270.34.

A final problem with the proposed regulations relates to Section 3205.3-6, which provides that lessees must pay a royalty on commercially demineralized water which they, inter alia, sell or use, except that "no payment of a royalty will be required on such water if it is used in plant operation for cooling or in the generation of electric energy or otherwise." This exception appears to be an unwarranted subsidy for electric power production and incentive for energy consumption, which is inconsistent with the basic energy policy objective of conserving energy resources (including geothermal resources) incorporated elsewhere in the proposed regulations. Further, water is a scarce, valuable resource, particularly in areas under consideration for geothermal resource development, and its depletion through utilization in electric power production or otherwise represents a cost that should be included in the price to the user.*/

* * * * *

Despite the improvements in the proposed regulations mentioned above, the Sierra Club continues to believe that

*/ The Bureau of Reclamation follows this practice in imposing a service charge for use of federal water for industrial purposes.

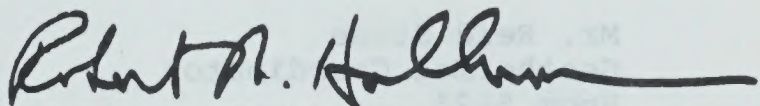
August 22, 1973

such regulations are inadequate and fail to comply with NEPA, as well as the public interest and environmental protection standards set forth in Section 15 of the Geothermal Steam Act of 1970.

This letter is not intended to constitute the entire comments or recommendations of the Sierra Club with respect to the proposed regulations. Additional comments will be prepared following receipt and study of any future environmental impact statement relating thereto.

If you have any questions or need any further information concerning the comments expressed herein, please contact the undersigned.

Very truly yours,



Robert M. Hallman

Attorney for the Sierra Club

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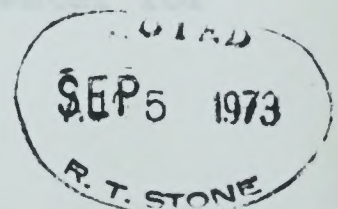
September 5, 1973

Mr. Reid Stone
Geothermal Coordinator
Room 5623
United States Department of
the Interior
Washington, D. C. 20240

Revised Proposed Geothermal Leasing
Program Regulations (38 Fed. Reg. 19748-19779,
July 23, 1973)

Dear Mr. Stone:

On August 22, 1973, I submitted to you comments on behalf of the Sierra Club with respect to the above-referenced revisions of proposed leasing, operating and unit plan regulations designed to implement the Geothermal Steam Act of 1970. I have enclosed copies of (1) Comments of Michael McClosky, Executive Director, Sierra Club, delivered at a Conference on an Interdisciplinary Approach to Geothermal Development held in Boulder, Colorado, June 25, 1973, and (2) Statement Concerning Geothermal Energy Development, presented by Douglas Scott, Northwest representative of the Sierra Club, before the Subcommittee on Water and Power Resources, Senate Committee on Interior and Insular Affairs, in Idaho Falls, Idaho on August 10,

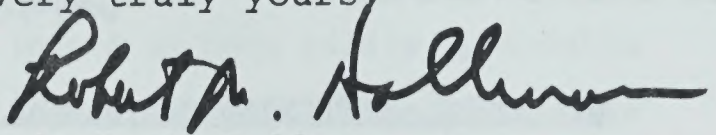


A-B 38

September 5, 1973

1973, to supplement my August 22 comments. I am hopeful that you will give the enclosed materials, together with our previously submitted comments and recommendations of the Sierra Club, careful consideration.

Very truly yours,



Robert M. Hallman

Attorney for the Sierra Club

Enclosures

RECEIVED AUG 13 1973



by Ansel Adams in *This Is the American Earth*

SIERRA CLUB

OFFICE OF THE NORTHWEST REPRESENTATIVE

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Testimony file

STATEMENT CONCERNING GEOTHERMAL ENERGY DEVELOPMENT

Before the
Subcommittee on Water and Power Resources
Committee on Interior and Insular Affairs
UNITED STATES SENATE

Idaho Falls, Idaho
August 10, 1973

Mr. Chairman, I am Douglas Scott, Northwest Representative of the Sierra Club. We welcome this opportunity to participate in your review of the status of research, planning and development of geothermal resources in the West. The comments I have to offer are based on detailed studies by a number of Sierra Club members and consultants having expertise in this field, and from our continuing involvement in review of Interior Department draft leasing regulations and the related draft environmental impact statement.

The development of geothermal energy resources may not be progressing at the rapid pace some advocates would perhaps wish. We and other environmentalists have challenged certain deficiencies in the draft environmental impact statement and many weaknesses in the proposed leasing regulations. Apparently some have been disappointed by this, having shared the hope Senator Fannin expressed at your hearings last year that environmentalists "would have leaped at the opportunity to support a geothermal steam leasing program."

It is not our practice to "leap" at anything. All of us should have learned by now the wisdom of proceeding with caution in eval-

uating and implementing proposals for the broad application of massive new technologies. Our sense of precaution is all the more heightened whenever a new program is offered up in a booster spirit as the purported "answer" to all our problems, as some have touted geothermal energy.

The Sierra Club and other environmentalists are not inherently opposed to geothermal development, indeed we have mildly optimistic hopes for it. But our interest is a cautious one, recognizing this resource as a possibly desirable alternative source of energy, yet tempering our enthusiasm by a healthy regard for the technical, environmental and institutional problems, land-use conflicts, and potential controversy involved.

* Prudence requires that we fully explore and evaluate the potential of this resource, but wisdom requires us also to take full measure of adverse environmental impacts, site incompatibility factors, technological limitations, and the many other values of the public lands which may be infringed or degraded as a result of geothermal leasing and development.

The potential advantages of geothermal development over other power sources now in use will doubtlessly be covered by other witnesses today. These do point to the long-range attractiveness of this source of energy. At the same time, full attention must be given to the potential environmental hazards and conflicts. These include: (1) pollution of ground water, (2) induced seismic activity, (3) land subsidence, (4) pollution of the land and surface waters by chemical depositions, (5) air pollution and noise, and (6) detrimental effects on wildlife. The Sierra Club is of the opinion that none of these

potential effects have been given sufficient study to determine their character, likelihood or possible magnitude in any known geothermal resource area. In our view, the draft environmental impact statement addressed to these problems was altogether inadequate, far too generalized, full of self-serving assurances that agency "supervision" pursuant to the proposed regulations would provide adequate protection, and devoid of enforceable standards and conditions which would assure effective protection of the environment and the public lands.

One of the most difficult problems posed by the proposed geothermal leasing program is the problem of land use and siting of facilities involved in geothermal development. These developments threaten to infringe upon a wide variety of areas having important ecological, aesthetic, historical, scientific and recreational values. In our view, little recognition has been given this problem and the proposed leasing procedures will do little to avoid major controversies in this regard.

While the Geothermal Steam Act of 1970 and the proposed regulations do exclude some categories of nationally-significant public lands from geothermal leasing (notably the National Park System), the following types of areas are not presently excluded from leasing:

- (1) Units of the National Wilderness Preservation System;
- (2) Units of the National Wild and Scenic Rivers System;
- (3) Units of the National Trails System;
- (4) Areas reserved by the Secretaries of Interior or Agriculture for ecological, scenic, natural, wildlife, geological, educational, historical, or scientific values, including primitive areas, roadless areas, back-country areas, natural areas, and pioneer areas;
- (5) Areas of de facto wilderness under study by the Secretaries of Interior or Agriculture for reservation as part of the National Wilderness Preservation System, and

river-lands under study for possible inclusion in the National Wild and Scenic Rivers System; and,

(6) Areas within one mile of the exterior boundaries of thermal pools, hot springs, geysers, fumaroles and mud pots.

We believe that these categories of public land must be fully protected against geothermal leasing, whether for exploration or development. If necessary, the Congress should amend the Geothermal Steam Act to exclude these areas.

We have also urged the Department to provide in its regulations that lands adjacent to any area excepted from leasing shall be withheld from exploration or leasing until the Secretary of the Interior has conducted detailed studies to determine the impact of geothermal resource development on such areas and made a specific finding that exploratory activities, drilling, or any development or operational activities would not adversely affect such areas.

Even with the exclusion of these kinds of special areas from leasing, serious land-use conflicts will remain, and these will occur in both exploration and development phases. As the members of this Committee know, this country is only at the very beginning of applying proper land-use planning. Over the next few years, the States will be getting their land-use planning processes underway, and effective plans are still some way off in the Western states. The Federal land managing agencies are also in a state of planning transition, as both the Bureau of Land Management and the Forest Service work to prepare or revise their planning procedures and to undertake a more comprehensive kind of specific area planning. The planning of rational geothermal development must be a part of this process, flowing from broader planning efforts and consistent with

comprehensive State, Federal and local planning goals. It would be illogical and counter-productive for geothermal leasing and massive development to take place outside of these land use planning efforts, or to be committed prematurely, before these new planning efforts can come into play.

The potential impact of geothermal leasing is demonstrated by the magnitude of land use involved. Exploration means access roads punched into remote areas and numerous test wells. Development will add massive impacts. Under the law, one lessee could tie up as many as 20,000 acres in any given state, with renewals for as long as 90 years. A geothermal field is an industrialized area during both its development and production stages. Its value for virtually any other public use is severely diminished, if not destroyed. Its impacts reach beyond the immediate site, first in the network of transmission lines, and inevitably in the build up of localized industrial and commercial development.

It is clear from an examination of maps of known and potential geothermal resource areas that the potential of very serious land-use and environmental impact controversies exists. Unless these issues are given due attention and unless the proposed leasing programs are improved with appropriate controls, we can predict that there is going to be serious conflict with geothermal schemes in many parts of the West as a result of opposition not only from environmental groups, but by sportsmen, ranchers, the whole spectrum of recreational users and others enjoying the values of the public lands. We sincerely hope the Interior Department will take the potential for these conflicts serious. IF appropriate areas are excluded from leasing, IF

additional areas are identified as one in which we ought to go slowly and carefully, IF the standards and enforcability of environmental protection provisions are sufficiently tightened, and IF the public is given an early, continuing, full and fair opportunity to participate in every step of decision-making, then many of the problems can be worked out and there need not be massive opposition from environmentalists and other users of the public lands

A fundamental element in any acceptable plan for geothermal leasing of the public lands must be full provision for protecting the public interest. The procedures and safeguards are available to assure this, but they have yet to be applied.

In the first place, the Interior Department could, if it wished, adopt a long-range plan for the geothermal program and let the public in on that plan. At this point, we have notice of only the three proposed leasing areas in California. It is not clear whether the Department has devised any method of establishing priorities for leasing among the various Known Geothermal Resource Areas, or areas prospectively valuable, nor are the reasons for selecting the first three explicitly stated. It appears that the criteria were a combination of favorable geologic conditions, the proximity of power-hungry markets, and commercial interest. If these are the criteria for leasing priority, they should be acknowledged as such and the public should be told what other areas, based on the same criteria, might be selected and when.

Early notice of interest in particular areas for exploration or development leases would go a long way toward taking the element of ~~surprise out of the process and enabling all of us to participate~~

in a more thoughtful, less suspicious process of evaluation and decision-making.

Second, when specific areas are to be put up for leasing, whether for exploration or development, full compliance with the requirements of the National Environmental Policy Act will go far toward identifying, clarifying and dealing with environmental and land-use concerns. The device of affixing new supplements to one general environmental impact statement cannot be accepted, particularly when environmentalists have already found that statement altogether inadequate. In view of the magnitude of the major Federal action involved, and of the wide local variation in geologic, chemical, environmental and land-use conditions in different regions, we believe that individual, specific environmental impact statements should be prepared for each leasing site. It appears that Interior does not intend to proceed in this manner, but will substitute a so-called "environmental assessment," leading in many cases to a decision not to file a full impact statement. Inasmuch as this assessment procedure does not carry with it explicit, enforceable standards of adequacy, does not require public participation or even public notice, and does not insure circulation for comment to all interested agencies and local authorities, it is not acceptable as a substitute for the filing and circulation of a proper environmental impact statement. Failure to comply with the requirements of NEPA on each leasing site can only invite contest and delay in the whole program.

We have repeatedly urged the Interior Department to revise its proposed regulations so as to require public hearings as a mandatory

element of the decision-making process on all geothermal leasing. Such hearings should cover selection of land for leasing, the grant of leases, and the grant of surface use permits, including permits for power plants and related facilities. In such a forum, the public would have opportunity to test the sufficiency of coordination of leasing proposals with local, State and Federal land-use planning, to test the adequacy of measures proposed to deal with specific environmental problems, and to comment on the detailed provisions of the particular leasing proposed for the particular site.

We have endeavored to impress these points upon the Interior Department as it considers its regulations and environmental impact statement. The revision made thus far have simply not faced up to these real problems, and therefore this program is as likely to lead to serious land-use and environmental conflicts as ever. I can only repeat that the Sierra Club, while not opposed to judicious efforts to develop geothermal energy resources, will take all possible steps to assure that leasing and development programs on the public lands are fully consistent with the public interest.

COMMENTS OF MICHAEL McCLOSKEY ON A PAPER BY
MARTIN K. FULCHER AT THE CONFERENCE
ON AN INTERDISCIPLINARY APPROACH TO GEOTHERMAL DEVELOPMENT

Boulder, Colorado
June 21, 1973

Mr. Fulcher's paper provides a point of departure for me to offer comments generally on the interdisciplinary approach that has been taken to date with respect to geothermal development. The process has been far from satisfactory. This is evident in Mr. Fulcher's paper because he deals with only one aspect of the two major threads of environmental concern. One, of course, deals with the question of avoiding or mitigating any adverse impact upon the site of the development.

In connection with this concern, the literature reveals that there has been a fair amount of concern with questions of pollution, seismicity, subsidence, erosion, and so forth. There has been very little consideration, however, given to the question of site compatibility; in other words, should development on the site take place in the first place or does the site have higher values for other purposes?

The literature reveals very little concern for questions of site compatibility, though Mr. Fulcher does at one point indicate the National Park Service did an archeological survey of the Mesa site. On the whole, however, the whole question of site compatibility has been completely neglected in almost all discussions of environmental aspects of geothermal

development. For this reason, I want to direct my attention primarily to it today.

At the outset I should hasten to point out that the Sierra Club is not inherently opposed to geothermal development. In fact, we have mildly optimistic hopes for it, though it is only likely to offer a significant supplement to power supplies in a few Western communities, such as in Southern California, Idaho and New Mexico. But we are worried that a lot of site damage may be done in many places in the West as a result of an overly optimistic pursuit of the potential for geothermal development. A booster spirit is infecting much of the movement for geothermal development, and in the process it is difficult to get anybody to take a clear look at the problems and questions of site compatibility.

Actually, site conflicts can arise out of two quite different phases in the process. One phase deals with exploration and the other with development. The exploratory phase is more like the process of exploration in mining development. We are particularly worried that many new access roads may be punched into remote areas, with little concern for site compatibility, and conflicts with wilderness and wildlife may arise over the existence of those roads. Oil companies, particularly, are now interested in getting contracts for geothermal drilling, and they really are not too concerned about whether a feasible development ensues. Moreover, the utility companies that may finance them can write-off all of the costs and put them in the rate base that they pass on to consumers.

Wherever a development is feasible, we confront a problem that is then more akin to that posed by hydroelectric developments. Here we have a major industrial facility in a remote area (probably the largest that we will

ever face), and not only do we have conflicts on the immediate site, we face long transmission lines and the problems of site compatibility in routing them.

It is only very recently that we have finally elicited some dawning recognition of the existence of this problem of site compatibility within the Department of the Interior. In his speech to the American Institute of Chemical Engineers of March 13-15, 1973, Reid Stone, who is in charge of the program, finally recognized that certain areas might be closed to development permanently or temporarily. He said:

"Of particular concern to many environmental groups is the alteration of aesthetic qualities of an area due to industrial development. It is expected that geothermal developments may be prevented or limited in certain areas to avoid or minimize major land use conflicts. As future developments are planned, it is expected that public hearings will be required to establish a complete record where significant changes are proposed, and in some cases, court decisions will be required."

Unless serious consideration is given to such questions, I can predict that there is going to be serious conflict with geothermal schemes in many parts of the West as a result of opposition by environmentalists, and I am sure that lawsuits, protests and other objections are going to hold up development.

I think it far better for the industry to come to grips with these questions and try to avoid sensitive areas in the first place. In that way, I think many programs will be found to be compatible and will be able to go ahead without costly delays and friction. Also, by providing enough advance notice and consulting conservationists, costly mistakes and errors in siting can be avoided and some problems undoubtedly can be worked out in advance.

To better enable you to understand the sources of our concern over questions of site compatibility, I would like to review some of the history of the problem and its scope.

Thermal phenomena have occupied a central role in the evolution of national parks and resorts. The first national park in the United States was Hot Springs National Park in Arkansas, and of course the first of the classic national parks, Yellowstone, was focused very much on the geysers and hot springs that so characterize that region. Most of the early resorts in the United States were built around hot springs, and this tradition of course was carried over from Europe. Hot springs and geysers have fascinated mankind for a very long time and continue to provide a compelling recreational attraction.

It is important to realize that, under the Geothermal Steam Act of 1970, not only are BLM desert lands open to development, but the national forests too are almost all open to development, with all their multiple use values for recreation, wildlife and noncommercial uses. It is also important to recognize that the management programs for both agencies are now in a state of transition. The Bureau of Land Management has just begun to prepare management plans for its various districts, and in the process is identifying areas with special natural values, including primitive areas, natural areas, and geological areas such as hot spring geyser and thermal pool areas. The Forest Service is also in the process of revising its management plans, and generally is giving greater environmental emphasis in them, and is reducing its allowable cuts for timbering in many areas. It is also in the process of identifying roadless areas and reviewing them for wilderness values.

Thus both agencies are still in the process of fully identifying natural values on their lands and are trying to devise management plans to recognize and protect those values. While this process is underway, it is anomalous and inconsistent to suddenly have drilling rigs being brought into areas that are under study for possible protection as natural areas.

Under the Geothermal Steam Act, we are not talking about just a few areas. There are 96 million acres that have geothermal potential, and 58 million of them are under federal management. There are 1.8 million acres within known geothermal resource areas, and 1 million of them again are on federal lands. Within known geothermal resource areas (KGRA's), competitive bidding must be followed before leases can be issued, but on the balance of the federal lands with potential, noncompetitive leasing is allowed. It is also important to realize where the areas of prime emphasis are. The states with the grèatest KGRA's are, in order: California, Nevada, New Mexico, Alaska, and Oregon. The order is slightly different for those states with the greatest overall potential. They are: California, Oregon, Idaho, Nevada, Alaska, and Washington State.

Looking at the occurrence of hot springs as indicators of where geothermal zones are, an inspection of the maps of the West reveals that they are strung out along the crest of the Cascades and Sierra Nevada, are scattered throughout the Great Basin, cluster heavily in the Central Idaho wilderness region, run in a scattering along the heart of the Rocky Mountains, and in Alaska they are centered on the Wrangell Mountains, in the Seward Peninsula and the Katmai National Monument area, and on Kodiak Island, which is a national wildlife refuge.

There are obvious land use conflicts in all of these regions. The Cascade and Sierra crests are dotted with wilderness areas, national parks and potential wilderness areas. In the Great Basin, where water is in such short supply, hot springs and pools can be of great value as watering holes for wildlife, and thus conflicts can be great with drilling. The Central Idaho area is an area of classified and potential wilderness areas where the conflicts on that question are clear. In the Rocky Mountain chain, there are conflicts similar to those in the Cascades, and in Alaska a national park is being proposed covering most of the Wrangell Range. There are proposed volcanic national parks in the Imurok Basin on the Seward Peninsula, and the conflicts are obvious in and around the Katmai Monument and in the Kodiak Wildlife Refuge.

It is also important to have some sense of the number of acres that are involved in the various developments that are being proposed. In the first three prototype leases, 300,000 acres are involved. If any of them results in a development, as many as 8,000 acres can be covered with an actual development for a 1,000-megawatt electrical power plant. It is also worth noting that one lessee can tie up as many as 20,000 acres in any given state, and if the development goes forward there can be renewals for as long as 90 years. Thus large blocks of land can be tied up for extremely long periods of time. It is also worth noting that even an exploration under a lease can result in a significant impact upon a given tract. In the Mesa experimental developments in the Imperial Valley by the Bureau of Reclamation, as many as 40 exploratory holes were drilled in a fairly small area.

Now it is sometimes suggested that our concerns about site compatibility are taken care of in the Geothermal Steam Act of 1970 because certain areas are excluded from development. These are:

- "1. Lands administered by the National Park Service
2. National recreation areas
3. Federal lands set aside for the following purposes: fish hatcheries, wildlife refuges, wildlife management areas, game refuges, waterfowl production areas, wildlife ranges, and land acquired or preserved for the preservation of rare and endangered species."

While it was a signal achievement to get these exclusions written into the act, there were many other exclusions which should have been in the act. We have advocated and continue to advocate these exclusions, which should also be made:

1. Units of the National Wilderness Preservation System;
2. Units of the System of National Wild and Scenic Rivers;
3. Units within the National Trails System;
4. Areas reserved by the Secretary of the Interior or the Secretary of Agriculture for ecological, scenic and natural wildlife, geological, educational, historical or scientific values, including primitive areas, roadless areas, backcountry areas, natural areas and pioneer areas;
5. Areas of de facto wilderness under study by the Secretary of the Interior or the Secretary of Agriculture for reservation as part of the National Wilderness Preservation System;

6. Areas within one mile of the exterior boundaries of thermal pools, hot springs, geysers, fumaroles and mud pots.

We proposed these exclusions to the Secretary of the Interior in connection with his draft environmental impact statement and his proposed regulations, but to no avail.

Now these conflicts are not just hypothetical; there is a real conflict already evident in connection with the KGRA's identified by the Bureau of Land Management. Out of the 43 KGRA's identified in nine Western states, there are 20 whose development may be objectionable to conservationists. Thus, in about half of the cases, there may be serious objections raised by conservationists, though further inspection of the details of development proposals may reveal that the conflict is more apparent than real. However, at this stage, it is difficult to get detailed information about the exact site of any proposed drilling program.

But to sketch out the kinds of potential conflicts that concern us, let us look at KGRA's in a number of states. In Oregon, for instance, a KGRA covers the Klamath National Wildlife Refuge and sensitive areas near it. One covers the Newberry Crater Recreation Area of the Forest Service east of Bend, a little Crater Lake-like area that was once proposed as a national monument. Another covers the area of the Harney Basin, which includes the Malheur National Wildlife Refuge. Another runs into the Warner Range, which includes the Hart Mountain Wildlife Refuge. Another covers the Mount Hood area, which includes an existing ~~wilderness, a proposed one, a number of recreation sites, and other~~ similar conflicts exist in the Cascades in connection with the Carey

and Brightenbush Hot Springs areas.

In New Mexico, the Baca area is within the proposed Valley Grande National Park. In Nevada, the Beowawe area was once described as having the best geyser outside of the Yellowstone National Park. The Stillwater area has important historical values, and conflicts exist in connection with the Double Hot Springs area which has important wildlife habitat, and the Fly Ranch area, which is proposed as a national natural landmark. Also conflicts exist at Pyramid Lake which embraces the Anaho National Wildlife Refuge and where Indian water right questions are crucial.

Conflicts are similarly evident throughout California. We already have a history of conflict in two areas. In the early 1960's, a well was drilled on a private inholding in the Terminal Geyser Basin area of Lassen National Park despite conservationists' protests. And more recently drilling was done at the very edge of Mono Lake in and among the fragile tufa formations. At various times this area has been proposed as an addition to Yosemite National Park. The Long Valley leasing area extends from this area southward into the Owens Basin.

There is conflict in the Mount Shasta area, where a recreation area and a proposed wilderness is being studied by the Forest Service. There is a conflict in the Sespe Hot Springs area of the Los Padres National Forest, which is near a condor sanctuary. There is conflict in the Coso hot springs area of the Mojave Desert, which has important Indian values. There have already been protests and controversy over drilling by Atlantic Richfield in the Imperial Valley State Wildlife Refuge, particularly in its Wister Unit. Even in the Bureau of Reclamation's Experimental Program in the southern end of the Imperial Valley, it is possible

that the Algodones Dunes site might have conflicted with BLM recreational plans for those dunes, and other potential conflicts exist in the Salton Sea area with respect to the Imperial and Salton Sea National Wildlife Refuges. In Washington State there is a potential for conflict in and around the Mount St. Helens area where there is both a recreational area and a roadless area.

The kind of conflict that is possible in areas of this sort is graphically illustrated by situations in Nevada. In one, our local chapter has commented on the values of the Double Hot Springs areas as follows:

"This area was known to the pioneers who used the Applegate Cutoff Trail to California and Oregon. Double Hot Spring itself is a unique two-orifice hole--the west water is crystal clear and the east hole water (separated from the other by a five-foot land partition) is brackish black. This unique location contains a yellow flowering plant which may be unique. It extends its roots close to the nearly boiling water. The other springs also figure somewhat in history and because of this and that the area has quite well retained its natural qualities, it has been proposed to the U.S. Department of the Interior as a potential national natural landmark."

The kind of destruction that conservationists fear is revealed by a recent article in Nevada Highway News. Here is what that article said about the plight of the Beowawe Geysers:

"One woman, clutching a tourist guide describing the Beowawe geysers as 'The second largest geyser basin in the United States,' stared incredibly, then gasped: 'My God, what happened to it? It's taken us half a day to find it, and now this.....!'

Disappointedly, the tourists drove away.

What had happened, of course, was that some years before, it had been decided the geysers could be harnessed to provide geothermal power--somewhere. From Beowawe a new road was gouged out over a range of hills replacing the former ranch road leading to the site. The road was extended up the mountainside to the geyser bench to parallel the line of spouting springs, then to dip back to the valley floor,

looping the active area in a noose-like route over which heavy equipment could operate.

The least promising springs were sealed off with concrete slabs. More troublesome ones received the full treatment--steel pipes were driven straight down through them, then filled with concrete, choking them forever. Those deemed to be more active and powerful were partially sealed, fitted with caps and horizontal outlet nozzles, and allowed to shoot their jets of pressurized steam towards Whirlwind Valley.

Today, the site is a shambles of torn and twisted plumbing, some bearing evidence of having been blasted, torn from its roots, either by the geothermal pressures or by outside forces. Here and there the concrete slabs, like tombstones, mark graves of once lively thermal springs. Coils of heavy steel cable and other industrial junk left by the 'developers' litter the area once dotted with a variety of bubbling, boiling, steaming boisterous springs, fumaroles, and erupting geysers."

Now, not only is the general leasing program going ahead without any real attempt to expand the exclusions of areas open to drilling, but also the classic problems of pollution and pollution control have not really yet been adequately researched. Recently the National Science Foundation, in connection with its RANM study of geothermal resources, called for spending \$36 million over a 10-year period on environmental research. There has yet to be any commitment of any money remotely approaching this level to research these problems and to develop solutions to adequately deal with them. Moreover, the Bureau of Land Management and the U.S.G.S. have not compiled a very enviable record for care in protecting environmental values in connection with mineral leasing for oil development, which has the closest resemblance to this program. The General Accounting Office recently severely criticized the BLM for failures in connection with mineral leasing programs on Indian trust lands, and both the BLM and the U.S.G.S. in their administration of the Outer Continental

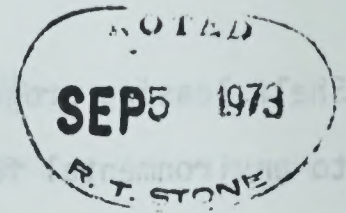
Shelf leasing programs have done little to indicate they were sensitive to environmental factors or to close off areas with problems to drilling. The states have done far more than the federal government has, despite the fact that an Act of Congress does now authorize the establishment of marine sanctuaries where drilling could be banned or severely curtailed.

In light of these problems, we sincerely hope that the Interior Department and those interested in advancing geothermal development will take the potential for these conflicts seriously. If appropriate exclusions are developed from the leasing program, and additional areas are earmarked as ones in which we ought to go slowly and carefully, many of the problems can be worked out and there need not be massive opposition from conservationists. On the other hand, if these warnings are brushed aside, there could be growing opposition and extensive litigation. We hope there will not be.



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E. C. Woodroof
Vice President
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August 31, 1973

Proposed Regulations
Geothermal Resources
43 CFR Parts 3000, 3200
30 CFR Parts 270, 271

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

We appreciate the opportunity to submit the following comments with respect to the proposed regulations appearing in the July 23 and August 8, 1973, Federal Register.

We recommend a new definition be included in 3200.0-5 designated as "(e)":

(e) "Geothermal steam," "steam or heated fluids," "geothermal steam or associated geothermal resources," and "steam" as used herein shall mean geothermal resources exclusive of any by-products derived from them.

These words are used throughout Subparts 3200 and 270 but they are not defined. The purpose of the words appears consistent with the proposed definition and its use will not only clarify that purpose but will avoid any possibility of an interpretation limiting the language in the regulations contrary to their intent.

We fail to see the need to acquire a separate permit for the use of the leased lands for a power generation plant or a commercial or industrial facility as required in 3200.0-8 in view of the requirement to file a plan of operation as set forth in 270.34. It would appear that duplication should be avoided. However, if the permit requirement is to be retained in the final regulations, 3200.0-8 should be supplemented to provide that the terms and conditions to be included in a permit shall not be inconsistent with and shall be no more onerous than the special terms and conditions developed as a result of the environmental review conducted under 3200.0-6, and the stipulations and terms and conditions established under 3201.1-2(b), 3201.1-3, 3201.1-4 and 3201.1-5.

We do not understand the meaning or the intent of subparagraph (2) of 3201.2(b). The subparagraph deals with ownership "in common." The early part of (b) talks in terms of "undivided interests." It is our belief that ownership of an "undivided interest" is ownership "in common." We respectfully suggest that subparagraph (2) conflicts with the early portion of (b) and that said subparagraph should either be deleted in its entirety or the meaning and intent thereof clarified.

3201.1-2(d). In view of the limited amount of acreage which can be held by a lessee, rather than reject the application(s) which causes him to exceed the limitation, we suggest the lessee be allowed 10 days to withdraw any application(s) and 90 days to surrender any lease(s) so as to be able to have awarded to him such application(s) without exceeding his acreage limitation. Similarly and for the same reason, we suggest the addition of such a provision to Part 3220. No language exists in this Part and it should be clarified.

3202.2-1(a) requires that each lease applicant state that his interests in Federal geothermal leases and applications (emphasis added) do not exceed the prescribed acreage limitations. 3201.2(a) provides that acreage in applications is not chargeable until the application has been given priority. To eliminate the conflict between the two sections we recommend that "and applications" be deleted from 3202.2-1(a). For the same reason the words "or applications" should be removed from 3220.2(b)(4).

3203.1-5 has been added and provides that any portion of a lease segregated from a unit or cooperative plan will not have an extension but will be segregated on the terms of the original lease. The leases have been out of the individual control of the lessee, drilling is by group reaction. His requests to drill are noted down but not always accepted. If the primary or extension term has expired or will do so in days, why should he be penalized. It is suggested that an extension of 2 years be granted if the lease term has less than two years to run in its primary or extended term.

3203.1-6(a). On the tenth line the fourth word should be entitled.

The diligent exploration requirement, particularly after the fifth year can, under given circumstances, become onerous and unreasonable. It is suggested that the following be added after "term" in the 19th line of 3203.5: "unless waived or modified by the Supervisor for good cause shown."

The Supervisor's discretion to impose additional and more stringent standards than Federal and State pollution abatement standards should be expressly limited to unusual and unique situations which reasonably demand such additional and more stringent standards - 3204.1(c).

3204.1(e) should be amended by inserting "reasonable" after "take" in line 2, and by substituting "such land subsidence or seismic activity" for "such activity" in Lines 6 and 7.

3204.1(g) should be amended by inserting "reasonable" after "deemed" in Line 2, and 3204.1(i) by adding "reasonable" after "the" in Line 2.

The next to the last sentence of 3204.3(a)(2) presupposes that the authorized officer will act upon the objections by the Lessee to readjustment within 60 days, although he is not expressly required to do so. Such period of time for action may not be sufficient in a given circumstance. If action is not taken within the 60 days, the lease can be cancelled without further notice to the Lessee. To rectify this inequity, it is suggested that the subsection be amended by deleting "the lease may be terminated by either party" commencing in Line 14, and substituting therefor "either party may serve notice upon the other that in the absence of an agreement within 30 days from receipt of such notice the lease will be terminated."

To provide for certainty, the rental should be established at \$1 per acre. At the time of application, the applicant should be able to estimate with certainty his costs of maintaining any lease. This is particularly important in view of the rental escalation provision of 3205.3-3 and the diligent exploration provisions of 3203.5 which are tied in with rentals. In other words, "not less than" should be deleted in Line 5 of 3205.3-1 and in Lines 2 and 3 of 3205.3-2. Any increase in rental can be effected by change in regulations from time to time as appropriate. If there is no change in this provision, we suggest language be added to allow a lessee 30 days in which to pay the difference between the amount submitted and the final rental amount.

The reference in 3205.3-1 to sub-part 3221 should be 3211.

The references to Section 3245.2 in 3205.3-2(a) and (c) should be to Section 3244.2.

To comply with Section 8(b) of the Act, the 4th sentence of 3205.3-9 should be amended to read "Unless the lessee files with the authorized officer objections to the proposed rentals and royalties or (added) relinquishes the lease within 30 days after receipt of such notice, he shall conclusively be deemed to have agreed to such terms and conditions."

We make the same recommendation for 3205.3-9 as we did for 3204.3(a)(2), i.e., delete "the lease may be terminated by either party" commencing in Line 22, and inserting "either party may serve notice upon the other that in the absence of an agreement within 30 days from receipt of such notice the lease will be terminated."

Should not the reference in 3205.4-1 be to 3205.3 rather than to 3205.3-3?

Should not the last reference in 3205.4-2 be to 3205.3 rather than to 3205.3-3?

It is suggested that "in an" be deleted from the third to the last line as well as the first "for" on the next to the last line in 3206.5.

It is suggested that "at the rate of" and "for each unit of coverage" be deleted from the last two lines of 3206.6.

Should not 3206.7-2 apply to statewide bonds as well as to a nationwide bond?

3209. We fail to see the necessity of requiring approval of a permit. Similar work has been going on in oil and gas for more than five (5) years and the approval feature has not been necessary. Further, the bulk of geothermal exploration involves less use of the surface than does seismic work. This work comprises geologic walk-overs, soil sampling, water sampling, installation of listening devices in holes dug by shovel and drilling some temperature gradient testing wells at 50' to 100' depths that are consistent in size with seismograph holes. The only time any great surface disturbance comes about is when a temperature gradient well is drilled to 2,000' or 3,000', and this cannot be done except under a lease. We see no reason to include the above work in an approval category.

If the approval feature is to be retained, the authorized officer should be required to act upon the Notice of Intent in a very short period of time, e.g., not more than 7 days and preferably not more than 48 hours, exclusive of Saturdays, Sundays, and holidays. For various reasons (weather conditions, crew availability, permit problems, information obtained from current operations, to name a few), it is often necessary to change exploration plans with little, if any, advance notice and move to a new area. Without early action on a given notice, valuable time and money will be wasted.

Further, we respectfully submit that Subpart 3209 should not apply to "retained mineral interests in lands, title to which has passed from the United States." It seems to us that the purpose of Subpart 3209 is to protect the surface of the lands being explored. With respect to surface owned by private individuals, it is our belief that negotiations with respect to damages should be between the party conducting the exploration operations and the surface owner.

Since an operator may extend his oil and gas statewide bonds or his nationwide bonds to exploration operations conducted under authority of Subpart 3209 and since such bonds are for the protection of the surface owner as well as the Federal government we see no need for the additional expense entailed in filing an individual bond as required by 3209.4-1(c).

3210.2-1(d) provides that the proposed plan must be submitted when required by the authorized officer. No time limit is specified. We suggest that the cited section be amended to include a provision that the plan must be submitted within sixty (60) days after receiving a request from the authorized officer.

We presume it is intended under 3210.2-2 that if an amended application, because part of the lands has been included in a KGRA, contains less than 640 acres, the application will be rejected. We recommend that if amendment is caused by declaration of KGRA after said application has been filed, the lease may be for less than 640 acres.

No time period for filing nominations is expressed in Subpart 3211. We submit that a 30-day period should be provided to give all interested parties an equal chance to participate.

3211.1(d) provides that the proposed plan of operation must be filed before a lease can be issued. 3211.2(g) provides that the plan must be submitted when requested by the authorized officer. It seems to us these two subparagraphs are repetitive and in conflict. It is recommended that subparagraph (g) of 3211.2 be deleted in its entirety. It is also recommended that a 60-day period from notification of successful application be granted for filing of the plan.

It is suggested that "together with the first year's rental, the balance of the bonus bid and the required bond or bonds and the proposed plan of operation" be added after officer in the third from the last line of 3220.6(d).

3241. Lease extensions and renewals have been omitted. Should it not be retained?

3241.1-1(a)(1), on the ninth line "include" should be "including."

The reference in 3242.2-2 should be to 3242.2-1 rather than 3243.3-1.

The reference in 3244.2-1 should be to 3244.2-2 rather than 3245.2-2.

3244.4 appears inconsistent with the Form of Unit Agreement required to be used. All leases subject thereto are extended by its terms consistent with the Act. We strongly suggest this provision be stricken.

We recommend the term "commercial quantities" as found in 270.2(n) be changed to read exactly as it is defined in 3000.0-5(h).

It should be made clear in 270.34 that in approving any plan of operations the Supervisor shall not include any conditions or requirements which conflict with or are more onerous than those included in special terms and conditions which have been developed pursuant to 3200.0-6.

We make the same comment with respect to 270.41 as with 3204.1(c). The Supervisor's discretion to impose additional and more stringent standards than Federal and State pollution abatement standards should be expressly limited to unusual and unique situations which reasonably demand such additional and more stringent standards.

We suggest the addition of "reasonable" after "such" in Line 6 of 270.43.

We suggest a provision be made in 270.62(a) or in 270.62(b)(2) for the lessee to deduct a proportion of the cost involved in directly using geothermal resources in manufacturing, power production, conversion to a product which can be sold, including the cost of necessary transportation to the point of sale, or other industrial activity such as is allowed in 30 CFR 221.51.

To avoid any misunderstanding, it is recommended that the report required by 270.77 be submitted within sixty days after completion of any given lease year.

The reference in 270.80 to 3245.3 should be to 3244.3.

271.12 Form of Unit Agreement:

- (a) In Section 2.1(h) of Article II, the phrase "prescribed in the regulations in this part" is used. It is recommended that this phrase be changed to read "prescribed in 43 CFR Part 3200 and 30 CFR Part 270."
- (b) We suggest that "the regulations and" be inserted after the word "Act" in Line 7 of Section 4.2, Line 2 of Section 17.7 and Line 5 of Section 17.11.
- (c) It is suggested that the last "the" in the eleventh line of Section 8.2 of Article VIII be changed to "any."
- (d) The reference in Section 11.3(b) of Article XI to Section 1.1 should be to Section 11.1.

- (e) Section 11.7. This requires automatic termination of a Unit effective as of the date determined by the Supervisor. We suggest that the words "if no appeal is made under 270.90" be added to the end of this section.
- (f) The reference in Section 14.1 of Article XIV to 3245.1 should be to 3244.1.
- (g) It is recommended that the following be added at the end of Article 14.2: ", and further provided that such written consent shall not be unreasonably withheld."
- (h) For the sake of clarity, it is submitted that the provisions of Section 6(d) of the Act be included in Article 18.1(b).

3200.0-5(k)(3). As before, we feel too much emphasis is placed on applications as a means of determining "competitive interest" to establish a KGRA. As proposed, any two lease applications covering some or all of the same lands automatically creates a KGRA as to those lands. Not only does this not seem the result intended by Congress in its definition of a KGRA in Section 2(e) but it is contrary to the requirements of something "known."

Many leases will undoubtedly issue many times and sometimes simultaneously on lands whose exploration will tantalize men's minds but will never produce geothermal resources or yield sufficient thereof to economically undertake production. Can the application of the proposed regulation equitably be used to determine a "known geothermal resource area?" The history of oil and gas leasing clearly establishes that it cannot and such history should not be ignored.

Further, in this connection, we quote from House Report 2140 on S-1674 (now the Act) as that report refers to Section 2(e):

"Section 2(e) defines the term 'Known Geothermal Resource Area' and thus distinguishes between areas of competitive and noncompetitive leasing. This term is used in much the same sense as the term 'Known Geologic Structure' as in the Mineral Leasing Act. The term 'competitive interest' in this definition is not intended to require competitive leasing of Geothermal Resources automatically in every case in which two applications are filed for the same land. To determine whether a given area is or is not in a 'Known Geothermal Resource Area' consideration must be given to all factors. (emphasis added)".

We submit that this proposed definition be stricken and the following language be inserted in lieu thereof: "The filing of two or more applications for the same land does not of itself indicate a competitive interest."

However, if you retain the present principle, we suggest a period be placed after KGRA and that "pursuant to the first sentence of this subparagraph (3)" be deleted. The first sentence of the subparagraph has to do with competitive interest existing in the entire area covered by an application whereas the latter part of the subparagraph deals with an overlap of less than one-half in which event "some" of the lands may be determined to be a KGRA.

"Geothermal resource province" is defined in 3200.0-5(j). This term is not used anywhere else in the proposed regulations. For this reason, we recommend that (j) be deleted in its entirety from the section.

Any consideration given to the foregoing comments and suggestions will be sincerely appreciated.

Yours very truly,

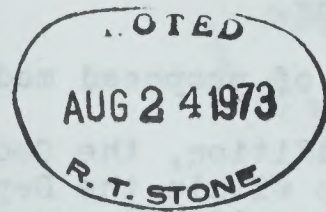
CHEVRON OIL COMPANY, WESTERN DIVISION

By 

AWD:dd

1001 B Guerrero
San Francisco, CA
94110

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240



Dear Sirs:

I would like to make the following suggestion of a change to the proposed rules for geothermal resource development, as published in the Federal Register, Vol.38, No.140, Monday, July 23, 1973.

I believe that the rules, as proposed, neglect the possibility of having geothermal development benefit local residents by not including a preference clause in 3202.1. The only preference clause contained in the current proposed rules is to those individuals and corporations who have had leases for other purposes who may, under these proposed rules, convert their leases into geothermal leases.

I would like to suggest the following modification to subpart 3202 of the proposed rules that should be adopted in the final rules in order for citizens to benefit fully from geothermal development:

PROPOSED RULE MODIFICATION

I. DELETE SUBPART #3202.1 as published.

II. INSERT AS SUBPART #3202.1 the following:

(a) Who may hold leases.

Leases may be issued to: (1) Persons who have resided in the United States for five or more years, including four of the last five years; (2) associations of such persons, as long as at least 80% of the membership shall include persons who have resided in the United States for five or more years; (3) corporations organized under the laws of the United States, any state or the District of Columbia; or (4) governmental units, including, without limitation, municipalities. The term "association" includes a partnership.

(b) Preference.

Preference in determining to whom such leases may be issued shall be in the following order: non-profit local organizations whose membership meets Federal poverty guidelines and whose primary purpose is economic development of geothermal resources to reduce poverty through job development; veterans; residents who meet Federal poverty guidelines; local residents; and all other eligible individuals, associations, corporations, and municipalities.

(c) The preference order in (b) above supercedes other preferences that may be indicated in previous rule making.

(End of proposed modification)

In addition, the Geothermal task force or similiar group within the Department of the Interior should make available economic projections of the expected return of the various geothermal fields under its jurisdiction. The amount of income to the Department of the Interior that could be expected under a 10% royalty agreement should be compared to a 50% royalty rate.

If the regulations were also changed to waive the requirement of cash posting before bidding, municipalities and not-for profit local economic development corporations would have the realistic opportunity of participating in geothermal development.

As they stand, the geothermal leasing rules as published in the Federal Register will insure the development of geothermal resources by only large energy corporations and other trans-national entities which may not have the best interests of this country in mind as they do business with the peoples land....public land.

Please keep me informed of the further developments of geothermal development. I would like to receive notice of the first public action that will result with the adoption of the rules as published.

Sincerely yours,

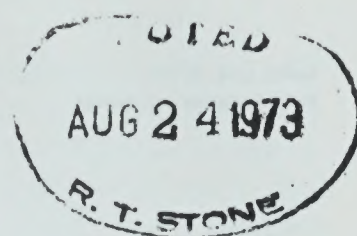
Daniel del Solar
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(212) 832-1177



SAMUEL M. EISENSTAT
J. MICHAEL GOTTESMAN

August 22, 1973

Geothermal Coordinator
Department of the Interior
Washington D.C. 20240

Dear Sir:

Pursuant to the material set forth in the proposed regulations relating to Geothermal leasing, we would like to take this opportunity to respectfully comment on said proposals.

1. Sec. 3201.2 relating to acreage limitation provides that an individual owning 20% or less of the stock of a corporation, will not be deemed to own that proportionate share of the company's geothermal leases. This provision would enable an individual to easily circumvent the acreage limitation as set forth in the Act. It would seem that these individuals could form a series of corporations and acquire as much acreage in a given state as they desire. I think that this provision of the proposed regulation should be eliminated.

2. Sec. 3205.3-5 relating to royalties is somewhat confusing as it pertains to the use of hot brines and the use of said brines in activities such as home heating or air conditioning. It is unclear as to what the royalty would be on such use. Clearly the calorie content of hot water is far less than that of steam, and it would seem unfair to require a 10% royalty on such use. In addition, the royalty on commercially dimineralized water which is really the end product of the brine is only 5%. It would thus be expected that the royalty on the

August 22, 1973

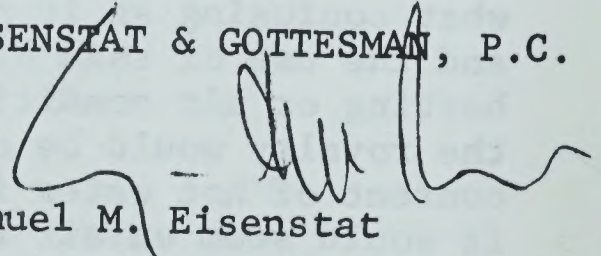
brine should also be 5% but this is not clear from the proposed regulations.

3. The competitive leasing provision as presently proposed, would favor the large companies to the detriment of the small ones. The clear intent to the statute is not to permit and inventorying of lease but rather to stimulate the prompt development of the resource. The situation which would result from the present structuring in the regulations will be an inventory of leases by the larger companies at a relatively insignificant cost to them and the smaller independent companies could thereby be effectively eliminated from bidding on the Federal Leases. It is suggested therefore, that a bid be submitted and that the lease be awarded to the highest bid. However the party bidding, should have a five year period of time within which to pro-rate payment of said bid, which obligation would accrue interest at reasonable rate.

We trust that these comments will receive your consideration and look forward to the final regulation as promulgated.

Very truly yours,

EISENSTAT & GOTTESMAN, P.C.


Samuel M. Eisenstat

SME/mf

Gulf Oil Company - U.S.

EXPLORATION DEPARTMENT

J. O. Carter
VICE PRESIDENT

P. O. Box 2100
Houston, Texas 77001

September 5, 1973

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20204

Re: Revised Proposed Regulations Pertaining to
Geothermal Resources Leasing and Operations
on Public, Acquired and Withdrawn Lands

Dear Sir:

Gulf Oil Company - U. S., a division of Gulf Oil Corporation, offers the following comments and suggestions to the Revised Proposed Geothermal Resources Leasing and Operations Regulations which were published in the Federal Register on July 23, 1973 (Vol. 38, no. 140, pages 19747 to 19779, inclusive):

(1) 43 CFR 3200.0-6(b) - Preleasing Procedures. We recommend that a time limit of six months be specified within which the Director must conclude his evaluation to approve or disapprove leasing of an area, unless the Director determines that the issuance of leases in that area would be a major federal action significantly affecting the quality of the human environment such that an environmental impact statement is necessary. Without such time limit, a lease applicant could be unreasonably burdened by being charged with the acreage involved, precluding his making additional filings in other approved leasing areas. Our comments concerning later sections will indicate that it is our feeling that the filing of an application should not cause the applicant to be charged with the acreage involved therein in determining whether the holdings of the applicant are within allowable acreage limitations. However, even if our position in that regard is adopted, we would still recommend the inclusion of a time limit of six months in this section in order to avoid undue delay in the processing of leases.

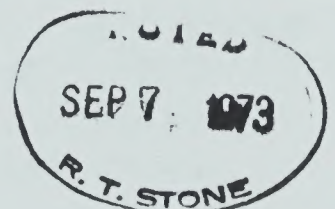
(2) 43 CFR 3200.0-8(a) - Use of Surface. We suggest the deletion of the following language of this section:

" ... however, any use of the leased lands or other Federal lands for a power generation plan or a commercial or industrial facility will be authorized only under a separate permit issued by the appropriate agency for that specific use and subject to all terms and conditions which it may include in that permit."



A DIVISION OF GULF OIL CORPORATION

A-B 71



This deletion is recommended because under § 3200.0-6(b) the Director, as a part of the preleasing procedures, is already required to make an evaluation considering the "potential impact of the possible development and utilization of the geothermal resources including the construction of power generating plants and transmission facilities on lands which may or may not be included in a geothermal lease."

(3) 43 CFR 3201.2 - Acreage Limitations. We recommend that the acreage limitations in subsection (a) hereof be significantly increased so that the prospect of being limited to leases on a specified number of acres will not deter companies contemplating extensive investments in the exploration for and development of geothermal resources.

Furthermore, as previously stated, it is also our position that in computing the acreage holdings of a party to determine that party's compliance with acreage limitations, acreage involved in any lease applications filed by that party should in no event be charged against him. Not only would the charging against an applicant of acreage merely applied for be inequitable under certain circumstances, the following provision of § 3201.2(e) indicates that it is unnecessary to charge such acreage against applicants in order to assure compliance with whatever acreage limitations are specified:

"No lease will be issued and no transfer or operating agreement will be approved until it has been shown that the applicant, operator, or transferee is entitled to hold the acreage or obtain the operating rights."

In this connection, we suggest that the following changes be made:

In subsection (a) of § 3201.2 delete, in the first sentence, the words "and in applications for Federal leases." In addition, delete the entire last sentence of that subsection.

In subsection (c) of § 3201.2 delete, in both sentences of that subsection, the words "or applications for leases".

In subsection (d)(3) of § 3201.2 delete, in the first sentence, the words "only, or applications for leases only, or both leases or interests in leases and applications for

leases", and delete entirely sentence (i) of that subsection.

In subsection (d)(4) of § 3201.2 delete, in the first sentence, the words "and applications for leases, or only applications for leases."

In subsection (a) of § 3202.2-1 delete the words "and applications."

In subsection (e) of § 3210.2-1 delete the words "or applications."

In § 3230.1-7 delete, in the first sentence, the phrase "or applications therefor", and delete the word "application" which appears later in the same sentence.

(4) 43 CFR 3203.1-3(a) - Additional Term. We recommend that the renewal lease to be issued pursuant to the preferential right of a lessee to renewal for a second forty-year term not be subject to "such terms and conditions as the authorized officer deems appropriate", since such a provision opens the door to arbitrary unilateral lease revisions by the authorized officer and makes it impossible for a prospective lessee to evaluate the right to a lease renewal upon the termination of the first forty-year term.

(5) 43 CFR 3203.1-4 - Extensions. We suggest that the references to "geothermal steam" in this section be amended to refer instead to "geothermal resources", since the latter term is more comprehensive than the former.

(6) 43 CFR 3203.5 - Diligent Exploration. We recommend that this section be revised to require mandatory diligent exploration only after the fifth year of the primary term. This revision is suggested in view of the extreme difficulty which a lessee would face if he were required to plan and budget for diligent lease exploration during the initial years of any lease. Furthermore, since the Supervisor's approval of a lessee's plans alone will usually take up a substantial period of time, possibly involving hearings and appeals, this regulation as presently written would seem to be impracticable.

(7) 43 CFR 3204.1(e) - Land Subsidence, Seismic Activity. We suggest that the following language of this subsection be deleted:

" ... and take such measures as stipulated to: (1) monitor operations for land subsidence and for seismic activity; and (2) maintain, and when requested, make available to the lessor, records of all monitoring activities."

It would be either extremely difficult or impossible to fully comply with the language quoted above.

(8) 43 CFR 3204.6 - Patented Lands. We recommend that this subsection be deleted in its entirety. We feel that since the terms and conditions of the lease when originally let need not be brought to the attention of the surface owner of such patented lands, the provision for notification to the surface owner of subsequent readjustments in the terms and conditions of the lease merely enhances the opportunity for frustration of the basic purpose of the lease. It is also important to note, in this connection, that § 14 of the Geothermal Steam Act of 1970 provides that

"Subject to the other provisions of this Act, a lessee shall be entitled to use so much of the surface of the land covered by his geothermal lease as may be found by the Secretary to be necessary for the production, utilization, and conservation of geothermal resources."

Moreover, under 43 CFR 3204.3 the terms and conditions of any geothermal lease may be readjusted to protect the surface of the land, whoever may be the owner. Finally, it is presumed that nothing would be readjusted which would go beyond the government's reserved rights in patented lands in using its reservation of geothermal resources, nor which would, contrary to the mandate of the Act, interfere with the protection of the surface of the land.

(9) 43 CFR 3205.2 - Service Charges. It is suggested that the word "nonrefundable" be deleted from subsection (d) so that if the lease application should be rejected for reasons beyond the control of the applicant (such as, for example, where the application is rejected pursuant to § 3210.4 when the land embraced in the application becomes included within a "known geothermal resource area" after the filing of the application but before the issuance of the lease) the applicant will be entitled to a refund.

(10) 43 CFR 3205.3-5 - Royalty on Production. It is recommended that this section be revised to include a provision to the effect that the royalties to be paid on production shall be specifically stated in the lease contract at amounts in accord with the provisions of this section.

(11) 43 CFR 3205.3-9 - Readjustments. We object to this section for the reason that it gives the Supervisor the power to adjust the rental and royalty payments which are provided for in the original lease, subject only to the lessee's right to file a protest to the adjustment and reach an "agreement" with the Supervisor concerning it. We suggest that this section be deleted in order to avoid rendering the future burdens on geothermal leases uncertain, thereby inhibiting the exploration and development of geothermal resources, and that the last sentence in 43 CFR 3204.3 (a) (2) be revised to read:

"The lease terms concerning rental and royalty rates may not be readjusted".

(12) 43 CFR 3209.1-1 - Application. We recommend that a subsection (c) be added to this section to provide substantially as follows:

"Maps and data required to be submitted shall not, if submitted with a request for confidential treatment, be available for public inspection without the consent of the Permittee for a period of two (2) years after submission."

This suggested subsection is modeled after 30 CFR 270.79, which provides for the confidentiality of geologic and geophysical interpretations, maps, and data which the lessee is required to submit, and its inclusion in this section will avoid a breach of confidence in the exploration operations of a Permittee and the financial loss to the Permittee which would follow such a breach.

(13) 43 CFR 3210.4 - Rejections. We recommend that the entire last sentence of this section be deleted and the following sentence be substituted therefor: "In the event of such an automatic rejection, the filing fee will be refunded." The deletion of the last sentence is suggested due to our feeling that it gives the authorized officer too much discretion to

reject such an application. The substitute sentence which is suggested for inclusion in this section is suggested in conjunction with our discussion of 43 CFR 3205.2(b), wherein we stated our belief that an applicant should be entitled to a refund in the event that his application is rejected for reasons beyond his control.

(14) 43 CFR 3230.1-6 - Method of Leasing to Owners of Conversion Rights to Geothermal Leases, or to Applications for Geothermal Leases. The typographical error in subsection (c) (2) should be corrected from KGEA to KGRA.

(15) 43 CFR 3230.3-2 - Statements Required. In connection with the previously discussed need to protect the confidentiality of exploration operations, it is suggested that the following sentence be added to subsection (c):

"Information and data required to be submitted hereunder shall not, when submitted with the request for confidential treatment, be available for public inspection for a period of two (2) years unless consented to by the applicant."

(16) 43 CFR 3241.1-1 - Record Title Assignments or Transfers of Leases or Undivided Lease Interests. We recommend that the 640-acre assignment limit of this section be revised to allow the assignment of any legal subdivision. Such a revision would enable a lessee to make a small acreage contribution which would promote drilling and at the same time allow a more precise evaluation of the remainder of the leased acreage. Alternatively, if there is a strong reason to preserve a minimum 640-acre lease as a record title, we recommend that the first sentence of subsection (b) hereof be revised to read as follows:

"A working interest or operating right may be assigned without regard to acreage, so long as the assignment covers acreage not less than that contained in a legal subdivision."

(17) 43 CFR 3242.2-3 - Water Wells on Geothermal Areas. This section should be revised to include reimbursement to the lessee for at least some fraction of the cost of drilling the hole, in addition to reimbursement for the fair market value of the casing.

(18) 30 CFR 270.2 - Definitions. The term "inefficient transmission" in subsection (j) (4) should be defined. This term presumably refers to heat loss per unit distance or per unit time, but as used in this subsection the term is ambiguous and subject to arbitrary interpretation. In subsection (o), we recommend a broadened definition of "area of operations" which would read as follows:

"(o) 'Area of operations' means that area of the leased lands which is required for exploration, development, producing and utilization operations, and which is delineated on a map or plat which is made a part of the approved plan of operations. It encompasses the area generally needed for wells, flow lines, separators, surge tanks, drill pads, mud pits, workshops, generating plants, transmission lines and other facilities used for on-project geothermal resources field exploration, development, and production operations." (underlined words added).

(19) 30 CFR 270.16 - Values and Payment for Losses. We suggest that the words "waste or" in the first sentence of this section be deleted. We do not believe that an operator should be responsible for compensating the lessor for alleged waste where it might be due to an unavoidable blowout or other accident which results in the venting of geothermal resources. Without the suggested deletion, this section imposes absolute liability on the operator without fault.

(20) 30 CFR 270.34 - Plan of Operation. The requirement in subsection (h) hereof for the collection of certain data concerning the leased lands for at least one year prior to the submission of a plan for production could be totally impractical in some cases. It is, therefore, recommended that an alternative requirement for the collection of such data be included.

(21) 30 CFR 270.35 - Subsequent Well Operations. The term "stimulate", as used in this section, should be defined. Although this term has an accepted meaning through common usage in the oil and gas industry, it may or may not mean the same thing to the Geothermal Supervisor.

(22) 30 CFR 270.37 - Well Records. In subsection (a), the term "safety devices" is too general. What is meant to be included in this term should be stated either by definition or by example.

In addition, it is recommended that some provision for extension of the thirty-day period of subsection (b) hereof be made. In many cases, thirty days may be an inadequate amount of time in which to assemble and transmit full records.

(23) 30 CFR 270.38 - Samples, Tests and Surveys. We object to this section for the reason that it imposes an arbitrary requirement on the lessee to make samples, tests, and surveys, apparently at the whim of the Supervisor, without limiting the obligation of the lessee with respect to the cost, time, or effort involved, and without a consideration of the benefit, if any, to be derived by the lessee in making the samples, tests, and surveys prescribed by the Supervisor.

(24) 30 CFR 270.42 - Noise Abatement. It is suggested that "noise" be defined in terms of acceptable sound level, duration, and distance to the nearest habitation or work area, rather than in terms of the nebulous concept of the "welfare of the operating personnel and the public."

(25) 30 CFR 270.46 - Accidents. In view of the obvious impracticality of notifying the Supervisor of "all" accidents on the leased land, it is recommended that some level of severity be specified, below which no notice would be required.

(26) 30 CFR 270.62(a) - Value of Geothermal Production for Computing Royalties. We object to and suggest the deletion of subsections (4), (6) and (8) hereof for the reason that they reflect a lack of definiteness and objectivity in the computing of royalties and are therefore inconsistent with the following provisions of 43 CFR 3205.3-5:

"Royalty shall be paid at the following rates on geothermal resources:

(a)... per centum of the amount or value of steam, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee;

(b)... per centum of any by-product derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee...."

(27) 30 CFR 271.12 - Article XIV - Relinquishment of Leases.
The reference in Paragraph 14.1 should be corrected to refer to
43 CFR 3244.1 rather than 43 CFR 3245.1.

Respectfully submitted,

J. O. Carter
J. O. Carter

JOC:CBB:pw



KARL S. LANDSTROM
ATTORNEY AT LAW
510 N. EDISON ST.
ARLINGTON, VIRGINIA 22203
TELEPHONE (703) 527-0968

August 20, 1973

Mr. Reid Stone
Geothermal Coordinator
U.S. Department of the Interior
Washington, D.C. 20240

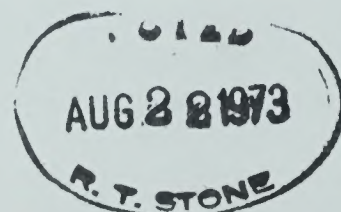
Dear Mr. Stone:

This letter, written on behalf of Geothermal Resources International, Inc., of 4676 Admiralty Way, Marina del Rey, California 90291, is in the nature of an objection to certain provisions of the revised proposed rule making to implement the Geothermal Steam Act of 1970 as those provisions are set out in the Federal Register of July 23, 1973, as amended by announcement in the Federal Register of August 8, 1973.

Geothermal Resources International, Inc. is one of several applicants for the recognition of conversion rights which are granted under Section 1003 of the Act. Section 1003(a) of the Act, in clearly expressed terms, grants to qualified claimants "the right to convert [their] leases or permits or claims to geothermal leases covering the same lands". Section 1003(e) requires such conversion to be accomplished in accordance with regulations to be issued by the Secretary of the Interior, and makes the conversion right contingent upon showing of substantial prior expenditures. Section 1003(f) specifies that any lands that are within any known geothermal resource area and that are subject to such conversion right shall be leased by a competitive bidding process, within which the person owning the conversion right is accorded the right to meet the highest bona fide bid within a specified time period.

The provisions of the Act just referred to are stated in the Act straightforwardly without being conditioned in any way by any expression that would suggest that the conversion right is contingent upon the exercise of any discretion by any official in the Executive Branch. The legislative history accords with the plain meaning of the statutory language, describing the right to convert as a "right". The House Report (No. 91-1544) states that such "right" is narrowly circumscribed, but the ways in which it is circumscribed are confined, in the Report, to the following:

1. The acreage limitation.



2. The requirement that any one seeking a conversion in a known geothermal resource are must meet the highest bona fide bid.
3. The provision that the conversion rights issued be exercisable only in accordance with regulations to be prescribed by the Secretary.
4. The provision that no right of conversion would apply unless the applicant demonstrates to the Secretary's satisfaction that he has made substantial prior expenditures within specified classes.

Nothing in the House Report or in the Senate Report (No. 1160) indicates that the conversion rights were to be subjected in any way to the discretion of any official of the Executive Branch insofar as concerns the recognition of a qualified applicant and the granting to him of the right specified in the Act's provisions. As a matter of fact, the reports expressly indicate that the present Act accords to pioneers in this field of public land development a recognition of their equities and grants to them a conversion right despite long-standing objection that had been raised by the Department of the Interior.

The conversion right provisions of the Act are stated in the Act as independent of, and without any expressed reference to, other provisions of the Act which relate to the authorization to the Department to grant geothermal leases on lands not covered by qualified conversion right applications. The Act ought to be faithfully interpreted and implemented by your Department as granting to qualified holders of conversion rights the actual "right" that is conferred upon them by the legislation, and not a conditional one which can be defeated by exercise of administrative discretion. The rule making power granted to the Secretary under the Act must not be abused by any attempt to relegislate the Act's provisions so as to deny to the qualified applicants the right conveyed to them by statute.

Examination of the proposed rules indicates that the Department has seriously misinterpreted the statutory provisions referred to. My judgment is that the proposed rules, unless amended, at least are excessively ambiguous in this matter and could be later construed so as to defeat these statutory provisions and the legislative intent which was behind them, which was to grant to the qualified applicants a genuine "right" to convert. In this regard, I respectfully refer you to the remarks of certain

Mr. Reid Stone, August 20, 1973, continued

Members of Congress during floor debate on the passage of S. 368, 91st Congress, which became the Geothermal Steam Act.

Senator Bible, the principal author of the conversion right provisions of the Act, at 116 Congressional Record 32177-8, made a statement to the effect that the early pioneers who held pre-existing leases or claims, if they should meet the qualifications of the bill, would be "entitled to convert" their holdings into leases under the pending legislation. The Senator's expression, "entitled", certainly accords with the legislative language, and does not suggest in any way that the contemplated entitlements would be subject to the possibility of an outright veto by fiat of the rule making powers of the Secretary of the Interior.

You will recall that the House Committee reduced the scope of the conversion right by requiring that the holder of the right, in the case of a known structure, to meet the highest bona fide competitive bid at a lease sale, and by making certain other changes. However the statement by Senator Bible, just referred to, is closely paralleled in floor statements subsequent to the House Committee action, by Congressman Saylor (116 Congressional Record 34858) and Congressman Johnson of California (116 Congressional Record 34859). All of these statements portray the conversion right as an entitlement to have the qualified applicant's application treated as a direct statutory grant, not subject to the possibility of being defeated by any discretionary action on the part of the head of any department.

Section 3201.1-2(b) of the revised proposed rules appears to be inconsistent with the Act's provisions and its legislative history, as described above, and should be revised along the following lines: After the word "regulations" in the second line of the subsection, insert the following: "except with respect to rights to conversion to geothermal leases or applications for geothermal leases as provided in Subpart 3230 of these regulations,". Also insert this same language of exception after the third sentence of the subsection which refers to lands withdrawn for any agency outside of the Department of the Interior.

Section 3201.1-3 likewise appears to be inconsistent with the Act's provisions and the legislative history. An exception clause, similar to that suggested immediately above, should be inserted at the beginning of the subsection. A clause of exception should also be inserted, for similar reasons, in Section 3201.1-4 which deals with lands to which Section 24 of the Federal Power Act is applicable.

Section 3220.1(b) of the revised proposed rules suggests that all lands within a known geothermal resources area must first be

Mr. Reid Stone, August 20, 1973, continued

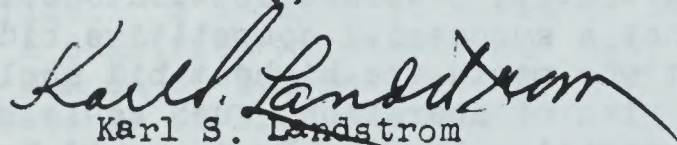
nominated to be leased before they may be considered to be offered in a competitive lease sale. In view of the Act's conversion right provisions and the legislative history thereof, this proposed rule obviously should be revised so as to indicate that lands which are subject to qualified conversion right applications shall automatically be considered nominated for lease sale. As a matter of fact, Subpart 3220 should contain a provision according the conversion right lands some degree of priority over other lands in the sequence of lease sales so as to comply in a timely manner with the statutory grant of right to the holders of the conversion rights.

I note that the Department intends to issue a final environmental impact statement under provisions of the National Environmental Policy Act prior to issuing the final geothermal leasing regulations. I trust that the final environmental impact statement will make it plain that the Act has granted to the qualified applicants a right to convert their leases, permits or claims into geothermal leases upon conforming to the Act's provisions, and that this right is not contingent upon any exercise of administrative discretion by the head of any department of the Executive Branch. Certainly the statement in the draft environmental impact statement to the effect that the Secretary might decline to issue regulations under the Geothermal Steam Act is clearly invalid and should be stricken from the final statement.

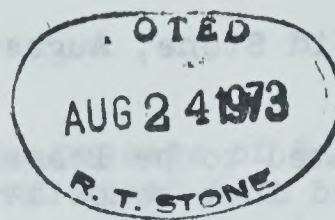
I hope that these suggestions will aid in the prompt issuance of final rules that will be in accordance with the applicable statutory provisions.

Please acknowledge receipt of this letter.

Sincerely,


Karl S. Landstrom
Attorney at law

KARL S. LANDSTROM
ATTORNEY AT LAW
510 N. EDISON ST.
ARLINGTON, VIRGINIA 22203
TELEPHONE (703) 527-0968



August 22, 1973

Mr. Reid Stone
Geothermal Coordinator
U.S. Department of the Interior
Washington, D.C. 22040

Dear Mr. Stone:

Supplementing my letter of August 20, written on behalf of Geothermal Resources International, Inc., I wish to make several additional suggestions for the improvement and correction of the proposed geothermal leasing rules.

In proposed Section 3205.3-1, reference is made to "Subpart 3221, of this part." However no such subpart appears in the proposed rule making. Perhaps the authors of the proposed rule had in mind Subpart 3230 dealing with conversion rights.

In proposed Section 3220.6(c) the statement is made: "The right to reject any and all bids is reserved." However, as pointed out in my letter of August 20, qualified holders of conversion rights have a statutory right to meet the highest bona fide bid at a competitive lease sale in a known geothermal steam area. Hence, the payment such a holder may submit, as provided in proposed Section 3230.1-6(a)(2)(ii), if it meets the highest bid, could not validly be rejected by the Department. I believe a clause of exception to such effect should be inserted at Section 3220.6(c) in order to avoid confusion on this point.

More importantly, proposed Section 3220.6(d) apparently contemplates that a successful competitive bidder or conversion-right applicant who meets the highest bid shall submit in detail a proposed plan of operation, such as is contemplated, in the case of noncompetitive leasing by proposed Section 3210.2-1(d), within 30 days after the lease has been awarded and the lease papers have been received for execution. I believe that this proposed requirement and time schedule is totally unrealistic. The required plan of operation undoubtedly will have to be in very considerable detail and adequate time should be allowed for its preparation. In any event, proposed Section 3220.6(d) obviously conflicts with proposed Section 270.34 of Title 30 CFR, which provides that a geothermal lessee may wait until commencing operations on the leased lands before submitting the plan of operation. The reference in 3220.6(d) to the plan of operation should be stricken, or at very least a much more reasonable time should be provided for its submission.

Sincerely,

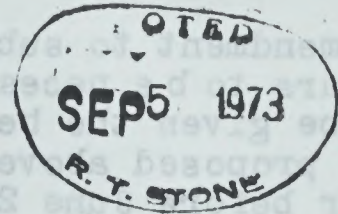
Karl S. Landstrom

A-B 84 Attorney at law

KARL S. LANDSTROM
ATTORNEY AT LAW
510 N. EDISON ST.
ARLINGTON, VIRGINIA 22203
—
TELEPHONE (703) 527-0968

August 31, 1973

Mr. Reid Stone
Geothermal Coordinator
U.S. Department of the Interior
Washington, D.C. 20240



Dear Mr. Stone:

Supplementing my letters of August 20 and 22, I have one further suggestion to make for the improvement of the proposed regulations to be issued under provisions of the Geothermal Steam Act of 1970.

Section 3230.3-1 of the proposed rules indicates that a written application for a conversion right shall have been filed with the proper BLM office on or before June 22, 1971, pursuant to the notice published in the Federal Register of January 15, 1971. And the Section, in its subsection (b) also provides that failure to have filed a conversion right application on or before June 22, 1971, will result in the loss of any such rights so claimed.

These are understandable provisions designed to implement the Act's provision, in Section Section 4, that the "right to convert" may be exercised "at any time within one hundred and eighty days following the effective date of this Act." However the Act appears to grant an absolute entitlement to a qualified applicant should he, indeed, file within the 180 days, and does not make such entitlement contingent, as the proposed rules appear to do, upon his having "filed with the proper BLM office." I believe it would be improper and unfair to penalize a qualified applicant who had, indeed, filed with the BLM on or before June 22, 1971, although he may have, because of innocent mistake, filed in the wrong BLM office. Accordingly, I suggest that the first sentence of Section 3230.3-1(a) be revised to read as follows:

(a) A written application shall have been filed with the proper BLM office on or before June 22, 1971, pursuant to the notice published in the Federal Register of January 15, 1971, 36 FR 623: Provided, That if the application was filed on or before said date in some other BLM office and such error is satisfactorily explained as being the result of ignorance, mistake, or some obstacle over which the party had no control, or any other sufficient reason not

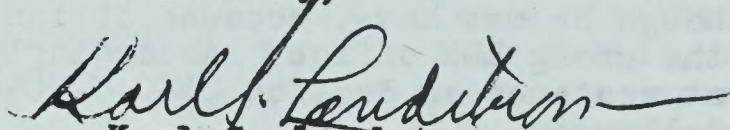
indicating bad faith, the authorized officer may determine, under principles of Section 1871.1-1 of this Title, that the application has been timely filed pursuant to the provisions of said notice.

No amendment to subsection (b) of Section 3230.3-1(b) appears to be necessary, inasmuch as any application which may be given the benefit of a determination under the terms just proposed above will, by definition, have been filed on or before June 22, 1971, which is the date corresponding to the final date for filing as provided in the Act.

Under the kind of situation I have in mind, no lawful adverse claim affecting the lands in question could have intervened on the part of a third party or parties, inasmuch as the mineral leases, permits, or claims which form the basis for the conversion right applicant's filing would have continued to exist at all times that are involved. Accordingly the granting of equitable adjudication, as proposed by my suggestion, so as to overcome an innocent mistake on the part of the applicant, could not interfere with any valid right of a third party. It would be, in my judgment, far too great a penalty against the applicant, in case of such an insignificantly minor mistake, to penalize him by considering his application, even though timely filed with BLM, as not having been timely filed with BLM merely because it was filed by mistake in the wrong BLM office. I trust that the Department will concur with me on this matter and that the proposed rules will be amended as I have suggested above.

Please acknowledge receipt of this letter.

Sincerely,


Karl S. Landstrom
Attorney at law



FEDERAL OIL, GAS AND GEOTHERMAL REPORTS

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(916) 482-7707

ROBERT G. LYNN

21 August 1973

Geothermal Coordinator,
Department of the Interior
Washington, D. C. 20240

Re: Comments on proposed Geothermal Resource regulations

Dear Sir:

Paragraph 3210.2-2 covering submission of applications states in part that on the first working day following the end of the application filing period all applications shall be opened. It does not say where they are to be opened. I believe it would be in the public interest to have the envelopes opened in full public view and either the salient contents of each application read aloud or a copy of each application posted on the bulletin board for public inspection. The Bureau interest would also be served in that this procedure would tend to reduce the number of topfilings during the subsequent filing period. It would also reduce any question the public might have with respect to whether all applications had been received and noted by the proper office.

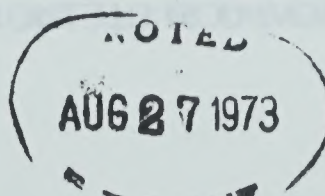
Paragraph 3201.2(b) covering computation of acreage limitations provides for relief from accountability for any party owning no more than 20% beneficial interest in the association or corporation. The Act does NOT provide for this relief.

Paragraph 3211.3(c) covering the method of filing for leasing units that fail to receive even one application during the simultaneous filing period should be amended by the addition of a statement that such lands are available for lease to the applicant first making a proper application therefor, the provisions of 3210 of this part notwithstanding.

The several references to the competitive bid sale of KGRA lands should be amended to the extent that the highest bid is always accepted, and that each sale is, insofar as the bid is concerned, without reserve. This permits the economics of the "market place" to govern the value of particular lands at a particular time.

Very truly yours,

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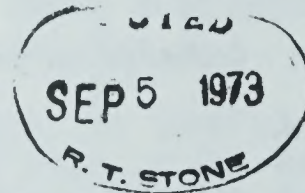


NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

2000 FLORIDA AVENUE, N.W. · WASHINGTON, D.C. 20009 · AREA CODE 202, 265-7400

September 4, 1973

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240



Dear Sir:

The following comments are submitted in reply to the Notice of Proposed Rulemaking appearing in the Federal Register, Vol. 38, No. 140 -- Monday, July 23, 1973, entitled "Geothermal Resources Operations on Public, Acquired and Withdrawn Lands and Geothermal Resources Unit Plan Regulations."

The National Rural Electric Cooperative Association is the national organization of nearly 1000 REA-financed, non-profit cooperatives which deliver central station electricity to over 20 million people in 2600 of the nation's 3100 counties throughout 46 states.

Since steam from geothermal resources can be used to generate electricity, we are naturally interested in the geothermal resources leasing program currently under development. We are disturbed, however, that the proposed regulations do not provide safeguards, other than the insufficient statement found in § 271.8(a), to prevent monopolistic control of publicly-owned geothermal resources. To be more specific, there are not adequate provisions to assure that the mostly small cooperatively-owned and publicly-owned electric utilities, or other small potential competitors in the energy market, will be able, under the regulations, to obtain access to geothermal resources on fair and non-discriminatory terms.

The Geothermal Steam Act of 1970 clearly addresses the issue of "protection of the public interest" in both Sections 18 and 24. Furthermore, there is a substantial body of law which places a clear responsibility on Federal agencies operating under standards of "public interest" to recognize the principles and policies of the Federal antitrust laws in discharging their responsibilities as delegated by Congress. NRECA believes that pursuant to Section 24 of the Act, which incorporates a public interest standard into the geothermal leasing program, regulations should clearly state that the Federal antitrust policies will apply in weighing bids for these valuable, unique and nonpolluting sources of energy.

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LOW COST ELECTRIC POWER FOR RURAL AMERICA

The very real threat to true competition in the energy resources market has been evidenced in recent years by the acquisition of several large coal companies by oil companies, and by the fact that a relatively few large corporations each control major reserves of oil, gas, coal and uranium simultaneously. Under the proposed regulations, which fail to recognize that the public interest requires something more than a "highest-bid" philosophy to implement the Geothermal Steam Act of 1970, this trend to even greater concentration of monopolistic power in the energy field could be accelerated. We believe the Act requires not only fair bidding, but also an analysis of the antitrust implications if leases are to be awarded only to those corporations or persons having the financial ability to make the highest bid. To do otherwise is to say that the "public interest" is strictly a matter of who can pay the most, and the consumers who were to be benefitted by the development of geothermal resources may never have the opportunity to share in the benefits of competitive leasing of Federal geothermal resources.

The decision of the Supreme Court of California in Northern California Power Agency v. Public Utilities Commission (1971), clearly illustrates the impact of the Federal and State antitrust laws in the geothermal area. In that case, an agency formed by municipally-owned electric utilities, the Northern California Power Agency, urged the Public Utilities Commission of that state to consider issues relating to application of the state and federal antitrust laws in a proceeding involving the granting of public convenience and necessity to Pacific Gas and Electric Company to construct and operate two geothermal power generating plants. In overturning the commission decision, the Court found that the commission had a duty to apply the state and federal antitrust laws in the proceeding. At issue in that case was the basic question posed by these regulations. The Court stated:

"It is no longer open to serious question that in reaching a decision to grant or deny a certificate of public convenience and necessity, the Commission should consider the antitrust implications of the matter before it. The Commission itself has stated: 'There can be no doubt that competition is a relevant factor in weighing the public interest,' and that 'antitrust considerations are also relevant to the issues of . . . public convenience and necessity.'"

In its decision, the Court provided a brief discussion of the law in regard to the responsibility and duty of Federal regulatory agencies to apply antitrust considerations when they act under "public interest" mandates from Congress. NRECA believes that the Department of the Interior, in light of the public interest mandate of Section 24 of the Geothermal Steam Act of 1970, must take into account antitrust considerations in the leasing of geothermal resources. We further maintain that this fact should be recognized in the regulations, so it

does not become necessary for smaller potential competitors, such as cooperatively-owned electric utilities, to resort to the courts to establish this principle. Such a result will only impede the rapid development of geothermal resources, and can be avoided by recognition of the antitrust responsibilities of the Department of the Interior in the present regulations.

For decades, the Department of the Interior has been administering power marketing programs which require preference in the sale of energy from federal projects be given to public agencies, electric cooperatives, and publicly-owned electric utilities. The various preference laws in the sale of power are not distant from the Geothermal Steam Act of 1970; rather, the principle involved is precisely the same: federal energy resources, such as water and steam, are not to be developed for the sole benefit of would-be monopolists. Preserving competition in the electric industry requires that the Department of the Interior assure all utilities, large and small, an opportunity to obtain leases on geothermal resources, just as the Department has previously assured competition by selling federally-developed power under the preference clauses.

Unless a recognition of the effect on competition in the electric industry in securing power supply resources is given in the geothermal steam regulations, cooperatively-owned and publicly-owned electric utilities will undoubtedly find it difficult to compete for bids against giant corporations with large financial resources.

In view of the importance of geothermal resources as a future energy source to the people of the United States, and in light of the dangers posed to consumers by further monopolistic developments in the energy field, we respectfully demand that a public hearing be conducted on these proposed regulations in order to provide an opportunity for all interested parties to present their views orally prior to publication of the final regulations.

Sincerely,

David B. Graham

David B. Graham,
Staff Counsel

DBG/cfc

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

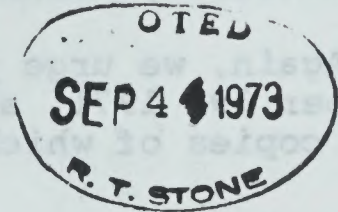


77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211

WILLIAM B. KUDER
ASSISTANT GENERAL COUNSEL

August 30, 1973

Mr. Reid Stone
Geothermal Coordinator
U. S. Department of the Interior
Room 5623
Washington, D. C. 20240



Dear Mr. Stone:

Pacific Gas and Electric Company's comments on changes in the Geothermal Regulations for leasing and operating on public lands are hereby forwarded.

We have, on each occasion that these regulations have been revised, forwarded to you the attached comments of November 19, 1971; but, unfortunately none of our comments has been reflected in the proposed regulations.

In a time of serious energy crisis we, as a major supplier of electrical energy, are gravely concerned about the restrictive, narrow provisions adopted by the proposed regulations. Concern should not only be to protect the environment but also, within reasonable limitations, to encourage the development of badly needed energy sources that do not have significant adverse impacts upon the environment.

As our previous correspondence indicated, we believe that current Federal and State environmental regulations are sufficient to adequately protect the environment. Our experience as pioneers in the development and utilization of geothermal energy indicates that the currently proposed regulations will seriously handicap further development of this desirable source of energy.

We are convinced that the readjustment of lease terms and conditions at ten year intervals discourages long-range planning. Furthermore, the provision allowing the Supervisor to close down operations that he determines to be unsafe or which are causing

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Mr. Reid Stone
August 30, 1973

Page 2

or could cause pollution gives the Supervisor unlimited power to close down costly operations of a developer without a hearing or without giving notice of any kind. A mistake on the part of the Supervisor could mean financial disaster to an innocent developer. For this reason, notice and a hearing are absolutely essential before closing down any operations.

Again, we urge you to review the comments forwarded on November 19, 1971, and especially our letter of December 28, 1972, copies of which are attached hereto.

Very truly yours,

William B. Kuder

Enclosures

COPY

December 28, 1972

Mr. Reid Stone
Geothermal Coordinator
Room 7000
U.S. Department of the
Interior
Washington, D.C. 20240

Dear Mr. Stone:

Pacific Gas and Electric Company's comments on revisions to the Geothermal Regulations for leasing and operating on public lands are hereby forwarded.

We are concerned that, with few exceptions, our previous comments of November 19, 1971 are not reflected in the presently proposed version of the regulations. As we said, it is unnecessary to add further environmental regulations in view of presently existing Federal and State regulations as this would only add further and costly delays and the overlapping of jurisdiction would only lead to confusion. This is not to say that environmental protection measures are unimportant, but our experience points out the necessity for a balanced view that includes the real need for latitude in effective development. Our experience as pioneers in the development and utilization of geothermal energy indicates that the proposed regulations would unreasonably handicap development of this desirable resource.

Also, and perhaps more important, is the distinct possibility that the economic competitive edge of geothermal energy might be lost in meeting the maze of regulations. We urge you to review again the comments forwarded on November 19, 1971, a copy of which is attached hereto.

We particularly invite your attention to several areas of the proposed regulations that we feel would discourage investment in plants and purchase of steam:

Subpart 3204 - Surface Management Requirements,
Special Requirements

Section 3204.3 Readjustment of Terms and Conditions

The readjustment of "the terms of any geothermal lease" at not less than 10 year intervals, as determined by the authorized officer, is not consistent with power plant investment and long range planning necessary for gradual, orderly field development. PGandE, while not opposing section 3203.1-2 (primary leasing term) and section 3203.1-3 (additional term), recommends that the ten (10) year lease readjustment provision of section 3204.3 be deleted.

Operating Regulations

Sec. 270.80 Noncompliance with Regulations or Lease Terms

The revised version gives the Supervisor authority, without giving any notice to "shut down operations which he determines are unsafe or are causing or can cause pollution." The thirty day notice provided in the original version has been deleted, and no set number of days notice is required by the revised regulations. This provision is all-inclusive it includes the innocent as well as the willful violator. More importantly it allows the Supervisor, in his sole discretion to close down an entire operation. Exercise of such unilateral and arbitrary authority could cause irreparable harm. We do not foresee conditions which would justify such action. We recommend that in these cases a hearing be granted and that this section be reverted to its original language which allowed a thirty day notice.

We appreciate the opportunity to present these comments to you.

Sincerely,

/s/ F.T.Searls

FTS:co
Attachment

bcc: JDWorthington, FWMielke, Jr., BWShackelford, EEHall
NHDaines, JPFfinney, WBallen, RBDewey, FVBiagini
WBKuder, PACrane, WEJohns, GWest✓

PACIFIC GAS AND ELECTRIC COMPANY

PART I

Comments on
September 1971 Draft Environmental Impact Statement
for the
Geothermal Leasing Program

1) Under the heading of Production Testing the following statement appears on page 18:

"Venting of steam to the atmosphere can create an adverse environmental impact if the steam contains large amounts of noxious gases, such as hydrogen sulfide. When such gases constitute a significant adverse effect, removal would be required (Appendix B, Section 270.41)."

At present there is no demonstrated method for removing hydrogen sulfide from steam at the wellhead on a well-by-well basis. PG&E recommends that the referenced portion of page 18 be revised as follows:

"Venting of steam to the atmosphere can create an adverse environmental impact if the steam contains large amounts of noxious gases, such as hydrogen sulfide. The rate of release of such gases would be regulated to prevent significant adverse effects to the environment (Appendix B, Section 270.41)."

Under the heading of Power Plant and Powerline Construction PG&E recommends that the above two sentences be substituted for the last paragraph on page 26.

Under the heading Gaseous Emissions in Appendix C, page 16, line 18, PG&E recommends that the phrase "the rate of release of such gases would be regulated to prevent significant adverse effects to the environment" be substituted for the phrase "the noxious gases would be removed prior to atmospheric discharge."

2) Under the heading of Production Testing the following sentence appears on page 21, lines 2-4:

"If toxic substances such as boron, sulphides, methane fluoride, selenium and others were present in such releases, they also would exert adverse impacts."

Neither the numerous analyses of geothermal fluids performed by PG&E laboratories and by contract analytical laboratories for PG&E, nor the analyses reported on page C-5 and in Appendix F, list selenium. While some dissolved methane would be expected in waste geothermal waters from the cooling towers, methane is not reported as toxic to fish. Therefore, PG&E recommends that these two materials be deleted from line 3 of page 21.

3) As discussed on pages 38, C-16, C-17, and C-35, landscape and vegetation are affected by road building and site preparation, but these effects can be minimized by proper techniques. Therefore, PG&E recommends that the first paragraph on page 27 be modified as shown below:

"It would be required that all access roads, including those related primarily to power generating and transmission facilities, be designed to conform to existing local standards to the extent practical; and plans would include provision to prevent them from becoming sources of airborne dust, as provided in the general provisions of the leasing regulations (Appendix A, Section 3200.0-6(b))."

Likewise, the above wording should be inserted before the last sentence in the second paragraph in line 11 on page 22.

PG&E also recommends that the first complete sentence in lines 1 and 2 on page C-17, "This practice generally has little detrimental effect on the plant life.", be replaced by the following sentence: "The effects of this practice on plant life can be minimized by proper design and technique."

4) Under the heading Production Testing Phase on line 18, page 38, PG&E recommends that the following two sentences be inserted:

"Land subsidence resulting from fluid removal is manifest primarily in areas underlain by poorly indurated, generally young, sedimentary rocks, and

recent alluvial soils. Terrain underlain by ancient rocks, generally well indurated and hard, as well as igneous and metamorphic types, rarely suffer land subsidence related to fluid removal."

As discussed on pages 28 through 30, land subsidence or increased seismic activity is a potential (emphasis added) impact, but has not been observed at The Geysers. Therefore, PG&E recommends that the word "potential" be inserted between the words "new" and "adverse" in line 8 of page 38; and the word "possible" added between the words "such" and "effects" in line 8, page C-24.

5) The relative impacts of fossil, geothermal, and nuclear power plants on the environment have not been clearly established or documented. Therefore, PG&E recommends that the phrase "which could have greater impact on the environment" on the last lines of page 41, the last sentence on page 43, and the phrase "and generally have greater adverse environmental impacts" on the last line of page C-37, be deleted.

6) The phrase "of electricity were generated in" on page C-4 should be replaced by the phrase "of electrical generating capacity were installed by."

7) Douglas fir should be added to the vegetation list on page C-7.

8) PG&E and the developers at The Geysers are aware of the possibility of mishaps caused by landslides at The Geysers and consider such possibilities during construction planning. PG&E therefore recommends that the middle paragraph on page C-23 be modified as follows:

"Another potential hazard that poses special problems vis-a-vis geothermal development in the Clear Lake - Geysers area is that of landslides. The drilling and production do not cause landslides, but rather landslides can seriously hamper operations and could conceivably result in casing rupture and perhaps uncontrollable escape of steam. The mountainous lands underlain by rocks of the Franciscan Series (most of the area) are the most susceptible, and landslides are

most likely to occur during wet weather when rainfall increases the soil weight above the unstable slide surfaces. Major landslide areas at The Geysers, along Big Sulfur Creek, are well mapped and are geomorphic features several hundreds to thousands of years old. They are a result of slope instability brought about by uplift of the Mayacamas Mountains. They are known areas of past instability and are cognizantly considered when planning well locations, steam transmission lines, power plants, and electrical transmission. Construction activity has created new areas of shallow slope instability of minor extent; however, they are monitored and repaired as necessary to provide both plant protection and public safety. The most effective preventative measure is to provide soil drainage in susceptible materials to prevent saturation of soil and underlying rocks. To the extent that grading provides such drainage, it tends to minimize the landslide problem; but large fills tend to aggravate the problem unless special techniques are used, including selective areas for fill, notching of fills into original ground, and special drainage designs."

9) PG&E recommends that the phrase "in the immediate area of roads, well sites and other installations" be added after the word "activity" on line 12, page C-25.

10) Both the geothermal steam and condensate are corrosive to some materials. Therefore, PG&E recommends that the second paragraph on page C-27 be replaced by the following paragraph:

"Both the steam and steam condensate at The Geysers are corrosive to some metals. Therefore, materials of construction must be selected for each corrosion environment that occurs. Minor leaks could occur due to corrosion, but should not result in any special hazards."

11) Some noncondensable gases are discharged along with water vapor from the cooling towers at The Geysers; therefore, PG&E recommends that the phrase "but contains no noncondensable gases" be deleted from lines 4-5, page C-29.

12) In line 16, page C-34, the first word, "metamorphic", should be changed to "sedimentary" since the reservoir rock is Franciscan greywacke, which is sedimentary.

13) After line 6, page C-35, PG&E recommends adding the following paragraph: "Land subsidence at The Geysers has not been experienced to date. Power plant elevations have been checked on a periodic basis for subsidence monitoring."

14) The fifth paragraph on page C-36 states: "Geothermal production may include seismic activity and cause land subsidence." Since this statement is under the heading ADVERSE IMPACTS WHICH CANNOT BE AVOIDED and since neither land subsidence nor increased seismic activity has been experienced at The Geysers, PG&E recommends that this paragraph be deleted.

PART II

Comments on Appendixes A and B Proposed Rule Making on Geothermal Resources Leasing and Operation on Public, Acquired and Withdrawn Lands

§3200.0-3 "Interest in Lease"

It would be desirable to clarify the definition of this term to show whether, under a contract for purchase of geothermal steam or other geothermal products, the buyer has an "interest". The California Legislature has recently amended a similar California law to provide expressly that:

"A purchaser of geothermal resources pursuant to a sales contract approved by the State Lands Commission shall not be deemed to have a direct or indirect interest in geothermal leases or permits." (S.B. 716, signed August 2, 1971, ch. 431)

Such clarification, and exclusion of purchasers as holders of interests, could be very important to geothermal development. First, clarification will eliminate an unnecessary element of uncertainty. Secondly, in some areas only one utility may have the financial and system resources necessary to utilize

geothermal steam.* For example, PG&E has about 15,000 acres under contractual commitment (only a small portion of which are actually productive), and yet by 1975 it will have only about 600 Mw of generation installed in the entire area.

Moreover, it would be desirable to provide that performance security provisions, such as allowing a purchaser to act as the lessee's operator in the event the lessee defaults, should also be excluded as an "interest". Such provisions are merely intended to give the purchaser some assurance that the lessee's performance will be forthcoming, which is of course a necessity for a public utility purchaser.

§3201.2 "Acreage Limitations"

As discussed above, depending on the interpretation of §3200.0-3, "interest in lease", the 20,480 acre limitation may effectively hinder, rather than promote, the orderly development of geothermal resources on government lands. Moreover, although PG&E is not experienced in natural resources exploration, a 20,000 odd acre limitation seems unnecessarily restrictive. As an example, PG&E's three steam suppliers at The Geysers have about 15,000 acres leased in that area and not all these are productive. This would indicate that a developer may find itself effectively limited to exploration in but one field per State if a 20,000 acre limit is imposed.

§3203.1-3 "Additional Term"

The maximum term of the lease appears very inflexible. PG&E's experience at The Geysers indicates the need for a gradual development of a new geothermal field. The utility must "feel its way" in determining the reliability of the field and then must factor the field into its long-range

*Reservoir mechanics of geothermal steam fields is still in its infancy. This raises reliability questions and utilities without strong conventional reserves may find geothermal generation too risky during this initial development phase.

planning. Gradual development is desirable for orderly field development. The long period required for development of geothermal fields and possibility of a protracted period for reviews before state utility regulatory bodies may not leave a sufficient period of time to amortize the very sizeable investments required for plant and transmission facilities under the proposed lease terms. PG&E recommends that the lease term be related to generating units, or industrial plants if other usage develops, as they are completed.

§3204.1-(c)(2) "Water Pollution"

This paragraph specifies, in part, that "Toxic materials shall not be released into any lake, water drainage, or underground water." Since toxic materials are frequently found in geothermal waters, the above is not consistent with the technique of disposing of waste geothermal products by reinjecting them back into the geothermal reservoir itself. Our experience at The Geysers indicates that under proper conditions reinjection can be an attractive solution to potential water pollution problems. Moreover, in the case of very briny hot water, reinjection may prove to be the only practical way of disposing of effluent. PG&E recommends that the sentence "Reinjection of waste geothermal fluids into a geothermal reservoir shall be permitted under controlled conditions." be added at the end of paragraph (c)(2) of Section 3204.1.

§3204.1(e) "Aesthetics"

This paragraph specifies that aesthetics be taken "into account in the planning, design, and construction of facilities on the leased premises." With respect to power transmission facilities, to the extent that aesthetics are considered an environmental impact, this regulation conceivably would duplicate existing Department of the Interior (Bureau of Land Management) regulations (Title 43, Chapter II, Subchapter B, Part 2850) which specify

various environmental conditions for transmission rights-of-way granted across public lands. PG&E recommends that this paragraph exclude considerations of aesthetics of transmission facilities which are covered by other regulations.

§3204.3 "Readjustment of Terms and Conditions"

See testimony (copy attached) for PG&E comments on this paragraph.

§3211.2 "Application"

Paragraph (d) of this section specifies, in part, that an applicant make a narrative statement describing measures to be taken to prevent or control pollution of surface and ground water. PG&E believes existing provisions of the Federal Water Pollution Control Act would adequately protect surface and ground water quality at geothermal developments on federal lands, and to this extent the proposed regulation duplicates the jurisdiction of other federal laws and regulations. PG&E recommends that "pollution of surface and ground water" on lines 13 and 14 of paragraph (d) be deleted.

Further, as presently drafted, this section could require an applicant to include information and details about proposed geothermal development facilities, including power plant and transmission, that he simply could not predict until after actual discovery of steam. This regulation should be modified so that an applicant would not be required to submit information that would of necessity be based on speculation.

3242.1-1(a) "Record Title Assignments or Transfers of Leases or Undivided Lease Interests"

This paragraph does not make clear whether a utility purchaser may be assigned surface rights for construction of power facilities. Also, if such rights may be assigned, it is not clear whether they may be less than 640 acres or if they are to be considered joint with the producer. Five to

ten acres of land should be sufficient for a generating plant and switchyard, and relatively few acres may be required for a transmission corridor.

PG&E submits that the producer should be given a permit for surface use at the time it receives its exploration permit, and that all or part of the surface use permit should be assignable to the party which will ultimately purchase and use any geothermal energy which is found.

3243.4 "Noncompliance with Regulations or Lease Terms"

Cancellation of a lease for noncompliance with regulations or lease terms seems to vest unnecessary and undue authority in the authorized officer. No utility could prudently make major investment in plant, and consider such plant reliable, under such a provision. The federal government could retain the protection it seeks with less stringent regulations in this regard. There is no reason why civil remedies, enforced either administratively or judicially, would not serve well for such protection.

§3243.5 "Removal of Material and Supplies Upon Termination of Lease"

The 90 day removal period after expiration of a lease may impose an unfair burden on the utility which owns large power generation facilities which it may wish to remove. PG&E recommends that the 90 day period be revised to 270 days, with the possibility of obtaining additional time for good cause shown.

3245.2-1 "General, Automatic Terminations and Reinstatements"

As now drafted this provision could result in an unfair penalty on a utility purchaser by virtue of a steam supplier default over which the utility may have little or no control. See also our comment on Section 3243.4. PG&E recommends that this section be modified to include provisions for a grace period during which time a utility purchaser could arrange to remedy a rental

payment failure by the lessee or seek other remedy prior to actual termination of the lease. In this way a utility will have an opportunity to protect itself in its contractual arrangements with its suppliers.

§270.16 "Royalties and Other Payments"

In the event a steam producer is selling steam to a utility purchaser, such as PG&E's present arrangements at The Geysers, the provisions of this section should require that any determination of the value of electric power produced include consideration of the constraints imposed by the market place (especially, cost of other forms of energy), cost of service and agreements negotiated at arms length between steam producer and purchaser and other affected parties.

§270.30(b)

This paragraph specifies, in part, the precautions to be taken by the lessee in matters of environmental effects. PG&E believes that compliance with the National Environmental Policy Act of 1969 would provide environmental protection. PG&E recommends that "(4) any environmental pollution or damage" on lines 7 and 8 of this paragraph be deleted.

§270.41 "Pollution"

The opening sentence of this section states: "The lessee shall not pollute the land, water, or air; pollute streams, damage the surface or pollute the underground water of the leased or other land." It would be literally impossible for geothermal development, or, indeed, any development, to comply with this provision in its strictest sense. The section goes on to state: "Federal and State air and water quality standards will be followed unless more stringent standards are stipulated by the Supervisor." PG&E believes the Supervisor should not be authorized to stipulate more stringent

standards if the lessee is in compliance with existing or future federal and State air and water quality requirements. Moreover, the subject of pollution abatement is covered in more detail elsewhere in the proposed regulations (refer to §3204.1(c)). PG&E recommends that §270.41 "Pollution", be deleted.

* * *

General

PG&E emphasizes that geothermal technology is still relatively new and that a considerable degree of flexibility is required in the administration of leases. The Public Land Law Review Commission recognized this in its June 20, 1970, Report to the President ("One Third of the Nation's Land").

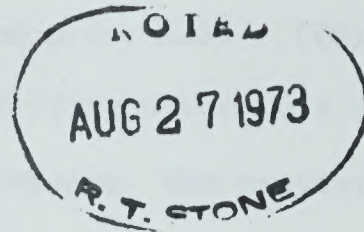
"Geothermal resources may well require tailored acreage limitations and flexible provisions relating to terms and conditions. Acreage limitations and guidelines for readjustment of terms and conditions in geothermal resources leases should be established with due regard for the nature of the resource." (Page 136, Emphasis as per Report)

As an example of the need for flexibility, it may take many years to develop fully a geothermal steam field. Unless the duration of leases can be related to individual units in the later stages of development of a field, there may be insufficient lease term remaining to amortize a new unit.

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627-0131

August 22, 1973

Mr. Reid T. Stone
Geothermal Coordinator
U. S. Department of the Interior
Room 5623
Washington, D. C. 20240



Dear Reid:

My comment on the Proposed Rules Federal Register, Volume 38, No. 152, dated August 8, 1973, are as follows:

Section 3230.1-5, particularly 1(a) and (b) seem fair, just and reasonable. I would like to compliment those members of Interior for finding and correcting this inadvertent omission to the Published Rules of July 23, 1973.

My only suggestion is that in (a) the qualified officer who must decide whether the expenditures of the applicant for the exploration, development or production of geothermal steam are substantial enough to apply for conversion to a geothermal steam lease be advised as follows (just in case he is relatively new to the job):

The pioneers in this field had enormous difficulty in raising money for their exploration and/or development efforts. The large oil and mining companies ignored us and so did virtually all of the recognised financial institutions. A handful of us had

Mr. Reid T. Stone

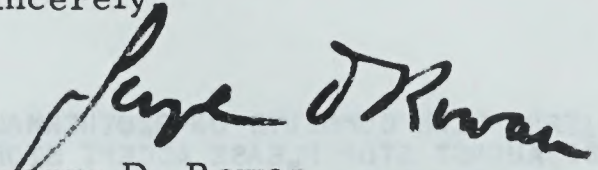
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August 22, 1973

to put up virtually all of the money ourselves and/or resort to selling "penny" stocks to the public. Hence, "substantial expenditures" in the early days were, by force of circumstances, infinitely less than would be reasonably expected in modern times when most of the large companies, and many smaller ones, are competing to get into this business.

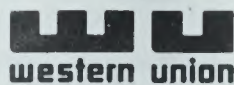
With kind regards.

Sincerely


George D. Rowan

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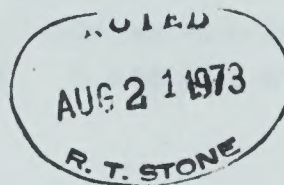


REID STONEGEOTHERMAL COORDINATOR
DEPT OF INTERIOR
WASHINGTON DC 20240

SIERRA CLUB COMMENTS ON GEOTHERMAL REGULATIONS BEING MAILED
21 AUGUST STOP PLEASE ACCEPT STOP
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by Ansel Adams in *This Is the American Earth*

SIERRA CLUB

Mills Tower, San Francisco 94104

20 August 1973

Mr. Reid Stone
Geothermal Coordinator
Room 7000
Department of the Interior
Washington, D.C. 20240

Dear Mr. Stone:

I enclose attached Sierra Club comments on the recent revision of the proposed geothermal leasing and operating regulations of the Department of the Interior.

We appreciate this further opportunity for comment, and ask that careful consideration be given to the points that we have raised.

Yours sincerely,

Hamilton Hess
Hamilton Hess, Chairman
Geothermal Task Force
Northern California Regional
Conservation Committee

NOTED
AUG 23 1973
R. T. STONE

A SIERRA CLUB STATEMENT ADDRESSED TO THE DEPARTMENT OF THE INTERIOR
REGARDING THE PROPOSED REGULATIONS GOVERNING GEOTHERMAL LEASES AND
STANDARDS OF GEOTHERMAL OPERATIONS ON FEDERAL LANDS

The Geothermal Task Force of the Northern California Regional Conservation Committee of the Sierra Club submits the following comments on the documents entitled "Geothermal Resources Leasing on Public, Acquired and Withdrawn Lands; Revision of Proposed Rule" (43 CFR Parts 3000, 3200) and "Geothermal Resources Operations on Public, Acquired and Withdrawn Lands and Geothermal Resources Unit Plan Regulations (30 CFR Parts 270, 271) published by the Department of the Interior in the Federal Register, Monday, July 23, 1973, Part II.

We note and commend the inclusion in this revision of certain clauses and stipulations which effect a modest strengthening of the environmental protection afforded by these documents. Most of our previously submitted criticisms remain in force, however, for the substantial changes in policy and procedure which we have suggested and which we deem necessary for the adequate protection of the environment from the effects of geothermal operations have not been made. We open this present critique with a few general comments and then proceed to a treatment of specific points. Some, but not all, of our previous comments are repeated here. Most are comments specifically appropriate to the present revision.

In our judgement, pervasive deficiencies in the regulations

applying to leases and leasing procedures and in the regulations covering geothermal operations on Federal lands arise from the following: 1) a failure to provide for mandatory public hearings in the regions affected so that the public interest and the rights of local residents and adjacent land owners may be adequately protected; 2) a failure to solicit the participation of State and local government in the determination of land use on Federal lands to ensure that already established or planned uses on adjacent non-Federal lands will not be adversely affected by geothermal development projects; 3) a failure to provide adequate mechanisms and procedures for the effective protection of the environment; 4) a failure to recognize the competency of local and County government to set standards and to control by ordinance all phases of geothermal operations taking place on Federal lands which are geographically situated within their domain; 5) a failure to provide for mandatory hearings in cases of appeal arising from violations or conditions not covered by regulation which adversely affect the local environment or the public welfare.

Our comments on specific points (by section) in 43 CFR Parts 3000, 3200 are as follows:

3200.0-6 Preleasing procedures -- The industrial character of geothermal operations and the large acreages necessarily devoted to them in regions of development cause a potentially serious problem of land use to arise whenever geothermal development is considered. Studies of present land use and potentialities for future use should be made in each area considered for geothermal lease, and this should be stipulated in paragraph (a) of this section. Some tracts

of public land have high recreational or scenic value or have inherently unique ecological, geological, archeological, historical or other value which makes geothermal development upon them permanently undesirable. The point here emphasized is the need for the provision in these regulations of long-term and broad-scale planning activities which will ensure the most beneficial commitment of land to specific uses. Such planning activities and land use studies should be undertaken in conjunction with State and local agencies, with opportunity provided for comment by the public. Further studies should be undertaken during the pre-leasing period relating to energy needs and the potential contribution to those needs that geothermal resource development in a given region might or might not make. Both the conservation of the resource and the retention of land for other potential uses would dictate that the resource should not be developed where its contribution to energy needs would be minimal.

The requirement in paragraph (b) of this section that a full evaluation be made of potential environmental effects of geothermal operations within any area in which leasing is planned is a needful addition to the regulations. We would point out, however, that the effectiveness of this procedure can be ensured only if it is required that appropriate Federal and State agencies and informed individuals be involved in the evaluation procedure. We urge that "may request and consider" and "may hold public hearings" be changed to "shall request and consider" and "shall hold public hearings." It is of critical importance that public hearings be mandatory for all proposed leases, and that the hearings be held, after due public notice, in the region of the proposed lease.

As a final comment under this paragraph, we would point to the inconclusive treatment given to the question of environmental impact statements. If the Director determines that the "issuance of leases in an area would be a major Federal action significantly affecting the quality of the human environment," he shall issue no leases ~~in~~ that area without issuing an environmental impact statement. We would point out that the decision regarding the significance of potential environmental impact and the decision as to whether an EIS is or is not to be issued is left to the sole discretion of the Director, with no provision made for participation in these decisions by Federal or State agencies or by the public, and with no mechanism provided for challenge, as would be the case if a negative declaration were required when a decision of no significant impact is made. We request that the rule governing this procedure be amended so as to provide for such participation or mechanism for challenge.

3200.0-8 Use of Surface -- The question of the siting of geothermal wells, power plants and transmission lines and other industrial or commercial facilities should be dealt with in this section. A public hearing on this and other matters relating to the permit required for such construction by this section should be directed to be held in the region of the proposed development.

3201.1-6 Excepted areas -- We request that additional area classifications for lands upon which geothermal leases shall not be issued be added to this section. These are:

1. Units of the National Wilderness Preservation System;
2. Units of the System of National Wild and Scenic Rivers;

3. Units within the National Trails System;
4. Areas reserved by the Secretary of the Interior or the Secretary of Agriculture for ecological, scenic and natural wildlife, geological, educational, historical or scientific values, including primitive areas, roadless areas, back-country areas, natural areas and pioneer areas;
5. Areas of de facto wilderness under study by the Secretary of the Interior or the Secretary of Agriculture for reservation as part of the National Wilderness Preservation System;
6. Areas within one mile of the exterior boundaries of thermal pools, hot springs, geysers, fumaroles and mud pots.

3204.1 General -- With regard to surface management requirements generally we urge the requirement of adherence to the regulations and standards of local and County governments as well as those of State government (specifically in paragraph (c) and (c). (1), (2) and (3)).

A number of comments are to be made concerning paragraph (c) on "Pollution abatement." Further restrictions in terms of State and local regulations on the use of pesticides and herbicides should be included in subparagraph (1), as biological communities in neighboring regions can be adversely affected by the use of these substances. In subparagraph (5) it is stated that "the lessee shall control noise emissions from operations." This is wholly inadequate. Some standard table of noise levels should be adopted, and adequate monitoring and enforcement procedures should be directed.

In paragraph (f) specific policies regarding aesthetics and

and visual impact should be set forth, and these should be stated as having application both to environmental impact studies (43 CFR 3200.0-6) and to the evaluation of plans of operation (30 CFR 270.34). The presently stated form of this regulation is grossly inadequate in setting forth no standards and in leaving matters of aesthetics to the lessee, and presumably also to the Supervisor. Matters for specific treatment should be the size of drilling pads and general policies for their location in relation to the terrain; location, routing policies and manner of installation of steam or hot water transmission lines; policies regarding routing, width and dust-proofing of roads. Policy statements should be quite specific, and the Supervisor should be given authority to enforce them. The regulation should also specify conformity to State, County and local policies and ordinances regarding the aesthetics of land use.

In paragraph (g) the choice and specification of measures for fish and wildlife protection, and also for the protection of vegetation, should be assigned to representatives of appropriate Federal and State agencies.

In paragraph (h) an archeological, paleontological and historical survey should be required to be conducted on each leasehold by a qualified expert.

In paragraph (i) specific directions for land restoration should be stipulated (e.g. restoring land to original grade where possible, replanting with native cover) and provision should be made for the inspection of restored lands.

Regarding paragraphs (c) to (h) generally, we would raise several questions which need to be dealt with in terms of approp-

riate regulations. What procedures are to be adopted for inspection and testing? Who is to inspect and test and how frequently? To whom are residents or land users in adjacent areas to address their complaints if detrimental environmental effects occur?

In paragraph (j) semi-annual reports are required of the lessee regarding conformity to appropriate environmental controls and regarding any environmental damage which has occurred. A seeming inconsistency occurs between this section and 30 CFR 270.76. 270.76 calls for an annual report, and it is here stipulated that that report, if filed, can fulfill the present requirement. This disparity of report periods would seem to call for adjustment. Because considerable, and even devastating, environmental damage can occur over a period of six months or a year, we would recommend that monthly reports be required, together with a stipulation that significant environmental damage be reported to the Supervisor immediately (as in 30 CFR 270.30).

3204.30 Readjustment of terms and conditions -- This section seems to indicate that readjustment of terms and conditions relating to any lease is possible no sooner than 10 years after resource production begins. This is far too long a period. Terms and conditions of lease and operations should be reviewed at least annually -- and perhaps every six months for the first two years of any lease -- and provision should be made for review and alteration of terms and conditions at any time by public hearing in the locality of operation in cases of serious public complaint.

Our comments on specific points (by section) in CFR 30 Parts 270, 271) are as follows.

270.11 General functions -- We recognize the fact that because conditions vary greatly from area to area possibilities for differences in operating requirements and standards among areas are necessary, as provided for in this section. The section stipulates that before issuing GRO orders or other orders or rules the Supervisor "shall, as appropriate, consult with, and receive comments from Federal and State agencies, lessees, operators or interested parties." We commend the strengthening of this phrase over its form in the previous edition of these regulations, but we request that the clause "as appropriate" be clarified. The setting of standards of operation for each individual project is a critical matter, and the appropriateness or inappropriateness of the Supervisor's consultation with State and local agencies, operators and interested parties should not be left to his own discretion. Consultation over the setting of operating standards (not over incidental orders) with State and local agencies (planning departments, air and water quality boards, etc.) should be mandatory, and opportunity for public comments should be provided.

270.12 Regulation of operations -- Frequency of inspection is important. Some stipulation should be made to this effect, such as the requirement of monthly inspections at a minimum.

270.30 Lease terms, regulations, waste, damage, and safety -- Paragraph (c) of this section is a needful addition. We would suggest that oral reports of significant effects upon the environment should be confirmed in writing in less time than 30 days. We suggest 7 days.

270.34 Plan of operation -- Paragraphs (g) and (h) are appropriate additions to this section. The collection of meteorological

data should be included.

270.40 Well control -- Operating practices, blowout preventers, safety procedures, casing and cementing programs should be required to conform to State standards where these exist.

270.41 Pollution -- The lessee should be required to conform to all County and local standards in addition to Federal and State.

270.76 Annual report of compliance with environmental protection requirements -- The lessee's report of conformity to environmental controls should be made more frequently than once a year. Monthly reports would be appropriate. Meteorological or atmospheric effects and thermal pollution should be added.

Respectfully submitted, 20 August 1973,

Hamilton Hess, Chairman
Geothermal Task Force
Northern California Regional Conservation
Committee
Sierra Club

REGISTERED MAIL -
RETURN RECEIPT REQUESTED

August 29, 1973

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Gentlemen:

Re: Proposed Rule Making
Department of the Interior
Geothermal Resources-Leasing on
Public, Acquired and Withdrawn
Lands; Revision of Proposed Rule

Signal Oil and Gas Company, one of the pioneers of the infant Geothermal industry, was a key proponent and advocate of Federal Geothermal Legislation which resulted in the "Geothermal Steam Act of 1970." In response to your invitation to participate in the rule making process pertaining to geothermal resources, as requested in the July 23, 1973, issue of the Federal Register, Vol. 38, No. 140 (as amended and extended in the August 8, 1973, issue of the Federal Register, Vol. 38, No. 152), we wish to call your attention to the following matters:

1. Subpart 3230.1-6 - Methods of Leasing to Owners of Conversion Rights to Geothermal Leases, or to Applications for Geothermal Leases.

We object to the addition of Subparagraph (2) (c), Paragraphs (1) and (2) in that your proposed Rules have expressly stated that the "owner of a conversion right to an Application for a Geothermal Lease where the lands have been included within a Known Geothermal Resources Area shall receive no preference right to meet the highest bona fide bid." We do not find this prohibition in Section 4 of the Act itself. To insert this interdiction by administrative action would serve to compound and further complicate the ambiguities inherent in Section 4 of the Act. If Congress had meant that preference rights on Applications under the applicable leasing acts would apply only to the leasing of non-competitive lands they would have so provided, as well they did with respect to the "right to convert" leases and permits and mining claims under the applicable Acts and mining laws as to Known Geothermal Resources Area lands. To give an application a preference right as to time to applications for geothermal leases on lands which are later classified as Known Geothermal Resources Area land becomes meaningless. The legislative history of Public Law 91-581 abundantly reflects that the Congress was of the opinion that those individuals who pioneered during the early years to develop geothermal steam under then existing laws established equitable claims and should have a priority under any new legislation. To eliminate this preference

one of The Signal Companies 9 A-B 119

**SIGNAL
OIL AND GAS
COMPANY**

2828 Junipero Avenue
Signal Hill, California 90806
(213) 636-3301

right, as you are attempting to do in your proposed rules, is legislating by administrative action. (By classifying all meaningful lands as Known Geothermal Resources Area lands, the Secretary is in fact administratively eliminating this preference right.)

In order to remove this ambiguity, the 1970 Act should be amended so as to obliterate the aforementioned inequity. Such can be accomplished by appropriate language such as that set forth in Exhibit "A" attached hereto and entitled "Proposed Amendment of Section 4(a), (b) and (c) of the Geothermal Steam Act of 1970."

2. Subpart 3200.0-5 - Definitions.

We here address our remarks to Subparagraphs (k), (2) and (3). Said Subparagraph (k) restates Section 2(e) of the Geothermal Steam Act of 1970 which defines a "Known Geothermal Resources Area" and was the subject of much debate and controversy during its years of formulation in Congress. The aforementioned Section was of deep concern and interest to Signal. Our position then, as well as now, was that the Secretary's guidelines were far too broad and all-encompassing. Our fears and apprehensions were indeed justified and not merely a speculative conclusion. The Secretary, within 120 days after the effective date of the Act, classified all potential geothermal resources areas in the Public Land States of the West and Alaska as being included within a Known Geothermal Resources Area. This was done even though numerous unsuccessful wells had been drilled within these very areas by Signal, as well as other operators, at a cost of many millions of dollars. Such blanket classification certainly points up the need for a better formula for the Secretary to use in classifying the lands in the public domain. The right, inherent in the Secretary under the Act, to classify extensive areas has already all but eliminated non-competitive leasing on public lands of any meaningful potential geothermal resources acreage. When this situation is coupled with the maximum acreage limitation of 20,480 acres, as set forth in Section 7 of the Act (Subparagraph 3201.2 - Acreage Limitations, subparagraph (2) of the Proposed Rules), the result is a direct deterrent to advancing geothermal exploration on the public domain.

To reduce the above to a common denominator: the very reason for which the Act itself was enacted, - i.e. to encourage geothermal exploration and the discovery and development of a new Energy Source on the public domain - is being discouraged by the administration of the Act itself.

Additionally, in Subparagraph (2), the department continues to expand the Secretary's already expansive powers by defining the word "nearby" (used in the definition of a Known Geothermal Resources Area) as related to a discovery or discoveries in the absence of a geological structure

(and, incidentally, this is a condition which almost always exists in the occurrence of geothermal resources), "to be five miles or less from any such discovery." Such a concept is a patent fallacy and one which we have disproved by actual drilling experience.

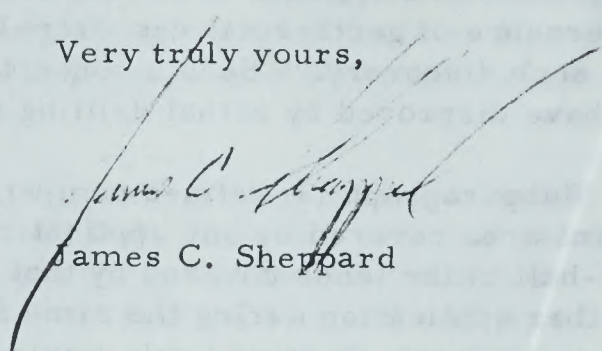
Subparagraph (3) defines competitive interest" as existing in an entire area covered by one application for a geothermal lease if at least one-half of the lands covered by that application are also covered by another application during the same filing period. The consequence of this unfortunate proposed rule would be that if more than one application is filed as to a portion (even only one-half) of the same lands then such lands would be determined as included within a Known Geothermal Resources Area and thereupon be leased by competitive bidding. The obvious conclusion in the Department's publishing of proposed rules such as these is that it is seeking to eliminate any geothermal leasing of non-competitive lands. If this had been the intent of Congress they would have written the Act accordingly. Such is not the case.

In reviewing our comments on Subparagraph 3200.0-5, subparagraphs (k) (2) and (3), we strongly feel that Section 2 (e) of the Act should be amended along the lines set forth in Exhibit "B" attached hereto and entitled "Proposed Amendment of Section 2(e) of the Geothermal Act of 1970."

The proposed amendment would give industry, as well as the Secretary, a more decisive guideline as to a Known Geothermal Resources Area and assure the availability of meaningful potential geothermal resources areas for non-competitive leasing. The act, as so amended, would then provide the incentives necessary to encourage exploration on the public domain for this new and badly needed energy source. Otherwise and most importantly and in lieu of such amendments, we strongly recommend that administrative action be taken immediately by the Department to modify the broad classifications of Known Geothermal Resources Areas heretofor made so as to be more realistic from a scientific and practical standpoint and be consistent with Congressional intent, in order that leasing and exploration of the Geothermal Resources on the public lands can move forward on a far more timely basis as is presently mandated by the current energy crisis in the United States. In the meantime, we must take strong objection to the proposed rules on the grounds set forth above, that they go beyond the wording of the Act itself and compound the unfortunate ambiguities which the Act, in its unamended form, contains.

We urgently request that appropriate action be taken in this regard.

Very truly yours,


James C. Sheppard

JCS/dml

Attachments (2)

Exhibits "A" and "B"

EXHIBIT "A"

"PROPOSED AMENDMENT OF SECTION 4 (a) (b) and (c)
OF THE GEOTHERMAL STEAM ACT OF 1970"

Section 4 -

(a) with respect to all lands which were, on September 7, 1965, subject to valid leases or permits issued or applied for under the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181 et seq.), or under the Mineral Leasing Act of Acquired Lands, as amended (30 U.S.C. 351, 358), or to existing mining claims located on or prior to September 7, 1965, the lessees or permittees or applicants or claimants or their successors in interest who are qualified to hold geothermal leases shall have the right to convert such leases or permits or applications therefor or claims to geothermal leases covering the same lands;

(b) where there are conflicting claims, leases, permits, or applications therefor embracing the same land, the person who first was issued a lease or permit or who first applied therefor, or who first recorded the mining claim shall be entitled to first consideration;

(c) with respect to all lands which were on September 7, 1965, the subject of applications for leases or permits under the above Acts, the applicants may convert their applications to applications for geothermal leases having priorities dating from the time of filing such applications under such Acts on lands which have not been included within any Known Geothermal Resources Area.

EXHIBIT "B"

"PROPOSED AMENDMENT OF SECTION 2 (e) OF THE
GEOTHERMAL STEAM ACT OF 1970"

Section 2 -

(e) "Known Geothermal Resources Area" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for the purpose of drilling wells for the extraction thereof: Provided, however, that in no event shall the limits of a Known Geothermal Resources Area be located more than one mile from a well capable of producing geothermal steam or associated geothermal resources in commercial quantities or observable surface manifestations of active underground geothermal activity."

Southern California Edison Company

SCE

P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

August 27, 1973

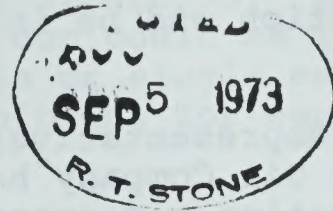
TELEPHONE

213-572-2281

WILLIAM H. SEAMAN

VICE PRESIDENT

Geothermal Coordinator
Room 5623, U.S. Department of Interior
Washington, D.C.



Dear Sir:

We are pleased to have an opportunity to respond to the proposed regulations for geothermal resources published recently in Volume 38, Number 140, of the Federal Register, July 23, 1973. The following changes are suggested:

Section 3200.0-8 - Use of Surface

The regulations, as now written, provide that the Lessee shall have a right to use Federal land either within the geothermal lease or on other Federal lands, presumably contiguous with the geothermal lease, for power plant siting or other installations as deemed necessary. In Edison's opinion, this is an essential addition. However, since such sites will be subject to the provisions of a separate permit, it is desirable that such a permit be made a part of the geothermal lease. The electric power plant operator, presumably a utility, will need to know what is required of it before committing to substantial expenditures for power plant construction. Furthermore, companies who have trust indentures should know at an early date, at the time the geothermal lease is issued, what the terms and conditions and type of property interest such a permit includes, so that it may be determined whether the generating facilities constructed on the land held under the permit can be considered as property securing the issuance of bonds. The permit should not be terminable without cause.

Section 3201.1-2 (b), Department of the Interior

The intent of Congress was to provide for the utilization of Federal land, including withdrawn lands, for the generation of electrical energy (House report No. 91-155, U.S. Code Congressional and Administrative News, Volume 3, P. 5115), and, since under the proposed regulations, the Lessee is required to produce water if it is feasible, there seems to be no real interference created by the leasing of Federal lands withdrawn under Section 416 of Title 43 of the United States Code. The only issue is whether the Federal Government should have the sole right to water proposed.

The subparagraph should be rewritten to provide for terms and conditions under which a lease may be obtained on withdrawn lands. This would dispense with any unilateral determination and be in keeping, therefore, with the intent of Congress.

Representatives of Southern California Edison Company and Getty Oil Company have worked out with members of the Bureau of Reclamation a reasonable prototype contract, which a lease applicant would sign as a condition of entering into a geothermal lease for lands withdrawn for reclamation purposes under 43 USC 416.

If the regulations are lifted from their present state or if a hearing to determine the terms and conditions is required, the duration in time between the application for a lease and its determination by the Secretary would be substantial. It is, therefore, necessary and equitable that during the time period, while the Secretary is making his finding as to whether issuance of a geothermal lease on withdrawn lands is compatible or not with the purpose for which they were withdrawn, the provisions regarding chargeable acreage limitations should not be applicable.

If the Secretary determines that as a condition of the lease, the Federal Government will receive a certain percent of the effluent produced from the leased land, then a like percentage of the total acreage of land leased should not be allocated as a chargeable acreage to the Lessee.

Section 3201.2 (a) Acreage Limitations

It is recommended that a period of time, probably 15 days, should be granted following drawings associated with simultaneous filings, provided for under Section 3210.1, to allow an applicant time to adjust his holdings and thus avoid exceeding the maximum allowable under the provisions as now written.

Section 3201.2 (b) (1) - Acreage Limitations

Because the maximum allowable acreage that can be held under the proposed geothermal rules is relatively small, as compared with other commodities, it is recommended that the last sentence of subparagraph 1 and all of subparagraph 2 be deleted. Other commodities, such as coal and potash do not have similar restrictions. For a newly developing energy source such as geothermal energy, it is desirable that joint ventures be allowed to share the risks of exploration on the entire allowable acreage in which each would have an undivided proportional interest. If

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the Secretary is concerned that a group will have gained control of too much acreage, then a limitation could be placed on total acreage held by any one group or combination of groups. As an example, the total acreage held by such a group could be limited to three times the amount held by individuals or single entities. This would encourage a greater effort in exploring for geothermal resources on the Public Domain.

Section 3201.2 (d) (3) (i) - Acreage Limitations

See comment under 3201.2 (a) above.

Section 3203.5 - Diligent Exploration

Should not expenditures for geologic reconnaissance work prior to issuance of a lease be credited towards maintenance of the lease if the work was done in the area where the lease was issued?

Section 3205.3-5 - Royalty on Production

Edison still recommends that royalty on production be given a fixed value. By providing for a range in royalty, definitive operating budgets would be difficult to establish for geothermal projects.

Section 3209.1 - Notice of Intent and Permit to Conduct Exploration Operations (geothermal resources)

It is assumed that the Bureau of Land Management will maintain notices to explore in a confidential status for some period of time. It is suggested that such notices of intent to explore be maintained in a confidential status for at least five years in order to keep the potential Lessee's area, or areas, of interest from becoming public information.

Section 3241.1 - Assignments, Transfers, Interests, Qualifications

Although as now written, the Secretary can make exceptions to the minimum acreage provisions of this section, it is still our recommendation that provision be made for assigning parcels of land substantially smaller than 640 acres. Geothermal electric generating plants will be constructed and operated by third parties in many cases and assignment of lease interests and surface use permits should be made for that purpose. Since geothermal electric generating stations are generally 50,000 to 100,000 kilowatts in size, an area of ten acres could be adequate

Geothermal Coordinator

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for the installation. Furthermore, if the utility should be the holder of geothermal leases, it would want to minimize the amount of acreage held for power plant use unless such acreage is deemed to be not chargeable under the acreage limitation provisions.

Sincerely yours,

SOUTHERN CALIFORNIA EDISON COMPANY

By

W H Seaman
Vice President

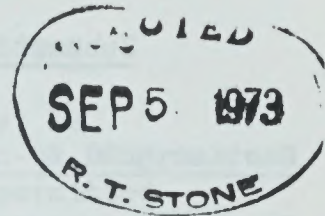


STANDARD OIL COMPANY OF CALIFORNIA,
WESTERN OPERATIONS, INC.

225 BUSH STREET SAN FRANCISCO CALIFORNIA 94120

D. G. COUVILLON
DIRECTOR AND VICE-PRESIDENT

August 30, 1973



Proposed Geothermal Resources
Regulations

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240.

Dear Sir:

Again, we appreciate the opportunity to comment on the latest draft of the proposed geothermal resources regulations which was published in the Federal Register for Monday, July 23, 1973. At the beginning of our comments we would like to compliment the Department on this improved version of these regulations. We think that some of the problems that we had encountered with the earlier drafts have been satisfactorily taken care of. However, we would like to point out the following matters which we think need some further attention:

Subpart 3200 - Geothermal Resources Leasing; General

Section 3200.0-5. Definitions

- (1) Subparagraph (j) under this section purports to define "Geothermal resource province." We have not been able to find where this term is used subsequently in the proposed regulations. If it is not used, it would seem to us that it is a superfluous definition and should be deleted.
- (2) Subparagraph (k) (2) purports to define "nearby discoveries" as such term is used in the first paragraph of subparagraph (k). As proposed, "nearby" will be considered to be five miles or less from any discovery. This would mean that an area of nearly 80 square miles would be considered for determination as a KGRA based upon the initial discovery. This would seem to be an entirely too large an area. As an alternative, we suggest that the radius of the circle be reduced from five miles to three miles for the purpose of this definition.

August 30, 1973

Subpart 3201 - Available Lands; Limitations; Unit Agreements

Section 3201.2 - Acreage Limitations.

In reading subparagraphs (a) and (b), we are uncertain as to the meaning of the word "association." As proposed, these two subparagraphs would permit each person in a group of seven to hold an amount of acreage far in excess of the maximum amount which can be held by one person. This could be done by substituting the seventh person for each one of the six individuals in an "association" owning a geothermal lease. Since none of the six would own more than 20% of the control, none would have any acreage chargeability. We do not believe that this is the intention and we suggest that if we are correct in this belief that this possibility should be eliminated by defining in detail the kind of an "association" which is contemplated in these subparagraphs.

Subpart 3203 - Leasing Terms

We are concerned about the use of the term "geothermal steam" in Sections 3203.1-3, 3203.1-4 and 3203.1-6. We recommend that the term "geothermal resources" which is defined in Section 3200.0-5(c) be substituted for "geothermal steam", which is not defined and is a much narrower term than "geothermal resources". We recognize that the Act uses the term "geothermal steam", but believe that the substitution of the term "geothermal resources" in the regulations as defined in the regulations is a proper interpretation by the Secretary of Congressional intent.

The above comment also applies to the use of "geothermal steam" in Section 3204.3(a) (i) and in Section 3205.3-7(a).

Subpart 3204 - Surface Management Requirements; Special Requirements

Section 3204.1 (c) (2)

We are concerned about the use of the word "may" in the last sentence of this subparagraph because of the overlapping jurisdiction of other governmental agencies besides Interior in this general field. If a water quality control board with jurisdiction in the area should refuse to permit disposal of waste geothermal fluids in any manner other than by reinjection, it would seem to us that in that case the Supervisor should be required to allow reinjection. Accordingly, we suggest that the last part of the final sentence which begins "may be permitted" be changed to read "must be permitted unless an alternate disposal plan is available in suitable reservoirs."

Subpart 3205 - Surface Changes, Rentals and Royalties

Section 3205.3-1 - Payment With Application

We believe that the reference to "Subpart 3221" in this section is incorrect and that the correct reference should be "Subpart 3211."

August 30, 1973

Subpart 3209 - Geothermal Resources Exploration Operations

As proposed, these regulations require that a "Notice of Intent" must be approved by the authorized officer before exploration operations can be undertaken on public lands. Since exploration operations for oil and gas are permitted under 43 CFR, Subpart 3045, without the necessity of prior approval by the authorized officer, we see no reason for a different procedure in the case of geothermal resources exploration. Especially is this so since the type of exploration activity, which is undertaken in connection with geothermal resources exploration, has less potential for surface disturbance than does the activity which accompanies oil and gas exploration. Consequently, we strongly urge that these regulations be changed to eliminate the necessity for prior approval of a "Notice of Intent" by the authorized officer.

Section 3209.4-1 (c)

As proposed, the regulations in this subparagraph would require the filing of \$1,000 bonds in addition to a nationwide or statewide bond prior to entry on the surface where the surface of the lands to be entered is not owned by the United States. We see no reason for the requirement for bonds in addition to the nationwide or statewide bonds. Consequently, we recommend that this provision be changed to permit satisfaction of this requirement by the filing of either a nationwide or statewide bond.

Subpart 3210 - Non-Competitive Leases; General

(1) Section 3210.2-1 (d).

Among other things, the proposed regulations require the filing of a proposed exploration plan. However, it is not clear from the last sentence of this subparagraph when this plan must be filed or whether in the discretion of the authorized officer it may not be required at all. We suggest that this language be clarified.

(2) Section 3210.3 (c)

As proposed, this subparagraph provides that applications received in the manner or delivered on the same day will be deemed as being simultaneously filed. However, the proposed regulations in Section 3210.2-2 provide for over-the-counter filing with priority to be assigned according to the date and time of filing. These two provisions are in conflict and they should be rewritten to resolve this conflict.

Subpart 3220 - Competitive Leasing; General

(1) Section 3220.3 - Publication of Notice of Lease Sale.

As proposed, this regulation requires the Secretary to publish a notice of lease sale in a newspaper of general circulation in the area once a week for four consecutive weeks "or for such other period as he may direct." We have two concerns with this regulation:

August 30, 1973

- (a) If the lands are in a remote area, the newspaper may not be generally circulated throughout the state and, consequently, prospective bidders may not receive notice of this sale.
- (b) Does the quoted phrase mean a period shorter than 4 weeks and, if so, how much shorter; or does it mean a longer period and, if so, how much longer? We strongly recommend that this regulation be revised to require that, in addition to the newspaper circulating in the general area of the lands to be leased, the notice also be published in the Federal Register and national trade journals, and that a copy of the notice be mailed to those persons who have requested that their names be placed on a mailing list. We also suggest that the quoted phrase be deleted.

(2) Section 3220.6 - Award of Lease.

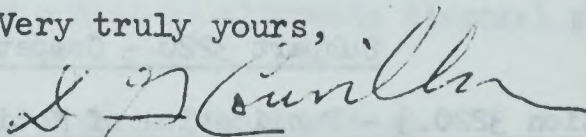
It is not clear from this section when a successful bidder will become chargeable with the acreage. It would seem only fair to prospective bidders that chargeability should not attach until such time as the lease forms are signed by the successful bidders. This would permit a bidder to submit bids even though at the time he submitted the bid, he did not have sufficient room in his chargeability account to permit him to take the leased acreage if he is awarded the lease. The 30-day interval within which the successful bidder must sign the lease would give the successful bidder time to reduce his chargeability in an amount sufficient to assume the chargeability resulting from the successful bid. Consequently, we urge that this regulation be expanded to provide that chargeability will not attach until such time as the lease is signed by the successful bidder.

Subpart 3242 - Production and Use of Byproducts

We believe the reference in Section 3242.2-2 to Section 3243.3-1 is incorrect. We believe the reference should be to Section 3242.2-1.

Again, we express our appreciation for the opportunity of submitting comments.

Very truly yours,



D. G. Couvillon

August 22, 1973

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

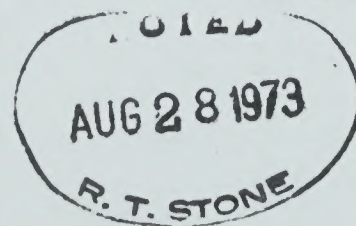
Dear Sir:

I have carefully reviewed the "Revision of Proposed Rule" covering Geothermal Leasing and wish to make the following comments dealing almost solely with 3200.0-5 Definitions (k)(3) "Competitive Interest".

Throughout the "Proposed Rule" namely 3201.2(d)(3); 3210.1(b); 3210.3(c); 3211.2(h); 3211.3(a) reference is made in one form or another to "priority of filing will be determined by a public drawing". In fact, in the last reference listed above the rule even goes so far as to state, "Three applications will be drawn for each unit."

I respectfully suggest that if 3200.0-5 Definitions (k)(3) is allowed to remain unchanged there will be no public drawings held for Geothermal Leases on Federal Lands at any time. Inasmuch as a "public drawing" implies the receipt of more than one application covering at least in part the same lands; that such occurrence will constitute "competitive interest" and thus the creation of a KGRA and, per 3210.4, the fact that lands within a KGRA are cause for application rejection, how, indeed can there be any meaningful public drawings?

I further suggest that the proposed definition of "competitive interest" as it applies to the creation of a KGRA will discourage anyone from applying for non-competitive leases at a cost of \$50 per application when surely their \$50 will "go down the drain" due to the extreme likelihood of 1/2 of one other application covering the same lands.

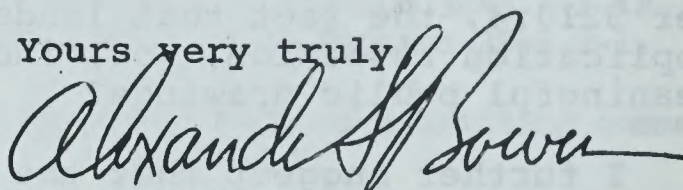


It would seem to me that the Government's best interest would be served by encouraging as much simultaneous filing as possible, rather than discouraging it, for two reasons.

1. As the landowner the Government must expect in the long run to receive enormous revenues from royalty if its lands prove to be Geothermally productive. This determination can hardly be made without leases being issued to interested parties. Discouraging filing would seem to me to completely defeat this much larger long range goal. In addition, the more leases that are issued, the greater the income from annual rentals would be to the Government.
2. It is well known in Oil and Gas leasing that many leases earn more for the Government in filing fees than they could earn in bonuses. This would certainly be true in Geothermal Leases, especially, since the science is new, undeveloped and inexact at best, and the filing fee is 5 times greater than that charged for the more easily evaluated oil and gas leases. If the "competitive interest" definition does indeed discourage non-competitive filings, it would seem to me that the Government will lose an enormous amount of potential income.

I, therefore, respectively suggest that the definition of "competitive interest" either be eliminated completely or at least changed to a much larger number of applications - say 100 - to properly reflect true "interest" in any particular property.

Yours very truly



Alexander Stewart Bowers

ASB:ow

Geothermal Division

Union Oil Company of California

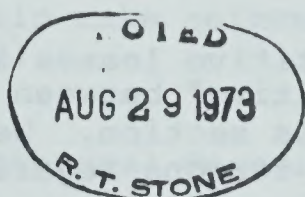
Union Oil Center, Box 7600, Los Angeles, California 90051

Telephone (213) 486-6260



Carel Otte
Vice President
and Manager

August 27, 1973



Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

Reference is made to the Notices of Proposed Rule Making by the Department of the Interior regarding Geothermal Resources Leasing on Public, Acquired and Withdrawn Lands and Geothermal Resources Operations on Public, Acquired and Withdrawn Lands which were published in the Federal Register on July 23, 1973. In accordance with your request that interested parties may submit comments, objection and suggestions to the proposed rules, we respectfully submit the following for your consideration.

Leasing on Public, Acquired and Withdrawn Lands

3200.0-6 - Preleasing Procedures

(b) The Director, when he evaluates the potential effect of the leasing program, should also consider the benefits to be derived from the development of the geothermal resource such as the impact on local employment, the tax base, the need for relatively pollution free energy, the utilization of geothermal energy as opposed to other fuels utilizable for other purposes, the national balance of payments, etc.

3200.0-8 - Use of Surface

The surface use restrictions should be determined at the time of leasing. The nature of the geothermal resource requires that its utilization takes place in the immediate vicinity of the wells because the limited distance geothermal fluids can be transported. Therefore, we believe that with the issuance of the lease, the lessee obtain the right to convert the energy into power so that it can be transported off the leased lands. If for certain reasons such plant installation is not in the public interest, this should be determined in advance of issuing the lease. Knowledge and experience to date certainly permits us to assess the impact of a power development and determine its

desirability.

There should be absolutely no doubt that upon the issuance of the lease the lessee has the absolute right to use the surface of the lands for the construction of power plants; withholding of this right after an operator has expended large sums of money to discover the resource would be immoral.

3203.5 - Diligent Exploration

This rule should be limited to non-competitive leases and could be accomplished by inserting "non-competitive" between "each" and "geothermal" on the first line of this section. We refer you to our comments under 3220.4 for our reasons regarding this amendment.

3204.1 - Land Subsidence, Seismic Activity

(e) We concur in the necessity to monitor land subsidence. However, the requirement to maintain monitoring operations for seismic activity is beyond the capability of most operators, since the seismic history of an area which is needed to serve as a frame of reference is inadequately known. If it is determined desirable to maintain such a program, it should be carried out by the USGS or other groups capable of seismic monitoring.

3210.2-1 - Applications

(d) The fulfillment of this requirement is more appropriate after the discovery drilling has been completed and prior to development. Obviously, lands which are not classified as KGRA are of an exploratory nature and very little information is available relating to the potential of the geothermal resources. It is meaningless to file a plan relating to roads, well locations, plant sites, pipelines, etc. before the resource has been discovered. It is impossible to determine the spacing of wells prior to discovery since the size, nature and extent of the reservoir is unknown and the pattern of drilling can only be determined after the wells have been tested and the most efficient manner of producing the resource has been ascertained. Well spacing in turn will affect the location and distribution of plant sites. We suggest that this subparagraph (d) be deleted from this section of the regulations.

3220.4 - Contents of Notice of Lease Sale

This section imposes a new requirement that a proposed plan of operation, as set out in 3210.2-1 (d), must be filed before a lease can be issued. We vigorously object to this requirement as it relates to competitive leases. The high bonus bids which will be required in sealed competitive lease sales should be adequate incentive for the lessee to diligently develop the lands to obtain a return on his high investment and should be sufficient incentive

for him to develop the property in a logical, orderly manner which is directed by the information obtained as he develops the property. He should not be limited nor be judged in default by a plan which was prepared with a minimum of information and factual knowledge.

3220.6 - Award of Lease

(d) We again make reference to the requirement imposed under 3210.2-1 (d).

Geothermal Resources Operations on Public, Acquired and Withdrawn Lands

270.37 - Well Records

(a) The second sentence should be modified regarding the content and character of mineral deposits and water in each formation to provide that this analysis be made when water is actually obtained from any particular formation and the temperature and pressure surveys be furnished only when run. We have rewritten a portion of this sentence underlining for your consideration the changes which we suggest. "The records shall contain a description of any unusual malfunction, condition or problem: all formations penetrated; the content and character of mineral deposits, the content and character of the water obtained from any formation, results of all thermal gradient, temperature and pressure surveys, analyses of geothermal waters...."

270.38 - Samples, Tests and Surveys

(a) This provision should be limited to basic data and should not include interpretive data which is proprietary.

270.43 - Land Subsidence and Seismic Activity

See our comments under 3204.1 (e).

270.62 - Value of Geothermal Production for Computing Royalties

(a) This provision allows the Supervisor to determine the value of production. This imposes an unequitable situation for the producer, if he has established the sale prices of the resource through arms-length negotiations with a third party. That sales price determines the value of the product in the market place. In the event a producer of the resource converts the energy into power himself, and no free market negotiation determined the value, this provision would apply.

270.77 - Public Inspection of Records

We do not feel that interpretative maps should be required data to submit and request that the word "interpretation" be deleted from the first and second lines of this section.

271.9 - Filing of Papers and Number of Counterparts

(c) This provision should provide that the Department will keep this information confidential by adding the following language at the end of the paragraph: "which data will be kept confidential".

ARTICLE IV - Contraction and Expansion of Unit Area

The sequential hook-up of power generating units in a geothermal field result in the sequential development of portions of the field. For example, there are areas within the productive portion of The Geysers field which will not be hooked up until after 1977. We request that a provision be included which would allow the Supervisor to extend the 5-year period if the operator shows proper cause.

ARTICLE VI - Unit Operator

6.1 Reference is made to the duties and obligations of the Unit Operator including distribution and utilization of Unitized Substances. This may very well have undesirable legal ramifications. We suggest the following provision be inserted on the seventh line following "provided": "however, each non-operator may elect to take his share of the production in kind and separately dispose of same".

ARTICLE X - Rights and Obligations of Unit Operator

10.1 Reference is also made in this section to distributing and/or utilizing Unitized Substances. Comment made in Article 6.1 is applicable here.

10.5 This provision places a tremendous amount of power in the hands of the Supervisor and Director. The "rate of prospecting and development" and "the quantity and rate of production" referred to will be covered by the terms of private and federal geothermal leases or contracts with public utilities. This provision would give the Director the right to abrogate or override these contracts, which would be unacceptable to the utility companies and private landowners. This section should be deleted.

ARTICLE XI - Plan of Operations

11.6 Since the extension period that may be granted by the Supervisor is limited to one period, the Supervisor should not be confined to one four-month extension, but should be allowed to grant any reasonable extension of time.

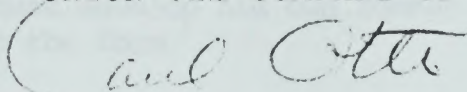
11.7 This provision deals with "actual production" of Unitized Substances and the penalties attached thereto. Due to the nature

August 27, 1973

of the geothermal industry and the long period of time between discovery and installation of power generating facilities and thus commencement of "actual production", we feel that the requirement of "actual production" is too rigorous. We submit for consideration "actual production" be changed to "capable of production in paying quantities".

Very truly yours,

UNION OIL COMPANY OF CALIFORNIA

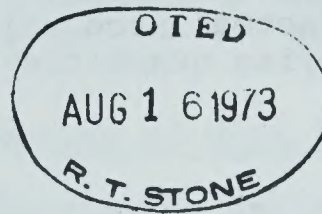


CAREL OTTE

CO/jh

WESTERN GEOTHERMAL INC.
INTERNATIONAL BUILDING
ST. MARY'S SQUARE, SAN FRANCISCO

August 13, 1973



Geothermal Coordinator
Room 5623
U. S. Department of the Interior
WASHINGTON, D.C. 20240

Gentlemen:

Subject: Revised Proposed Geothermal Lease Program Regulations

Thank you for your recent letter enclosing copy of the July 23, 1973 issue of the Federal Register containing the revised proposed regulations to govern the leasing of geothermal resources on public lands.

We comment as follows:

1) Subpart 3210 - Non-competitive Leases

Paragraph 3210-1(b) states that "all applications to lease the same lands which are filed between the effective date of these regulations and thirty days following that time will be considered to have been filed simultaneously, and the respective priority of the various applications will be determined in accordance with Paragraph 3210.3. In other respects the first thirty days after the effective date of these regulations shall be treated as an application filing period as provided in Paragraph 3210.2-2."

Paragraph 3210.3(c) states that "applications for lease received in the mail or delivered on the same day will be deemed to have been simultaneously filed, and the right of priority and the order of processing will be determined by a public drawing."

Paragraph 3210.2-2 states "applications for land determined to be KGRA will be rejected. All other applications will be assigned priority according to the date and time of filing."

We suggest that wording of the above referenced paragraphs be changed to make clear whether the intent is that all applications received during the thirty day period following the effective date of the regulations are to be given equal status or whether the date of filing during this thirty day period will determine priorities even though all of the applications are opened at the end of the thirty day period.

2) Subpart 3210 - Non-competitive Leases

Paragraph 3210.2-1 states that "an application for a lease must be filed on a form approved by the Director in the proper Bureau of Land Management office in duplicate for public lands and in triplicate for acquired lands."

It is not clear in the above referenced paragraph whether the Director of a particular Bureau of Land Management office will furnish an application form to be filled out, or whether the applicant must develop his own format and then obtain the approval of the Director as to the form.

We suggest that this point be clarified.

3) Applications for Non-competitive Geothermal Leases, Nominations for Competitive Leases, and Conversion Rights Leases.

We suggest that the Regulations state whether or not all of the different types of applications or nominations can be filed simultaneously or whether certain ones under procedures to be established (such as applications for conversion rights), should be filed first.

We suggest that this point be clarified.

4) Timing of filing with the various Bureau of Land Management offices

It is not clear whether or not all of the Bureau of Land Management offices will be prepared to accept applications simultaneously upon the effective date of the Regulations. It is also not clear whether all prospective areas will be open for filing simultaneously. There is some indication that some Bureau of Land Management offices may be prepared to accept filings before others. There are also indications that various districts under particular Bureau of Land Management offices will be open for filing before other districts.

We suggest that the above be clarified.

5) We suggest that the Regulations clarify a situation whereby an application might cover an area larger than a simultaneous application for only a part of the same area, where the applicant for the smaller area receives the lease by virtue of having filed a few days sooner or won the selection by lot.

Specifically, would applicant for the larger area be granted a lease on the excess acreage or would a new lease application on this land be required?

6) Paragraph 3210.2-1(d) states that "A proposed plan which shall include: (1) A map, or maps, available from State or Federal sources, showing the topography of the land applied for, on which the applicant shall show drainage patterns, present road and trail locations, present utility systems, proposed road and trail location, proposed well locations and potential surface disturbance, and (2) a narrative

statement setting forth his proposed plan and methods for diligent exploration. Such plan shall provide for a program of diligent exploration as defined in Paragraph 3203.5 of this subchapter.

The narrative statement shall also describe the measures proposed to be taken to prevent or control fire, soil erosion, pollution of surface and ground water, damage to fish and wildlife or other natural resources, air and noise pollution and hazards to public health and safety during lease activities. However, the proposed plan required by this paragraph need not be submitted with the application during the initial thirty day simultaneous filing period provided by Paragraph 3210.1(b) or during any application filing period pursuant to Paragraph 3210.2-2, but must be submitted when required by the authorized officer."

The above paragraph should be revised to make clear the intent. The inference here is that the proposed plan referred to in this paragraph need not be submitted with the application during the initial thirty day simultaneous filing period; although this is not absolutely clear in the wording of the paragraph. It appears that in submitting the initial application only Items 3210.2-1(a) (b) (c) (e) need be answered, and that the requirements under (d) need not be submitted at all until and unless "required by the authorized officer." If this is indeed the intent, the wording should be changed to absolutely clarify this point.

- 7) Paragraph 3205.3-5(a) states "royalty shall be paid at the following rates on geothermal resources: (a) a royalty, as set forth in the lease, of not less than 10 per centum and not more than 15 per centum of the amount or value of steam, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee."

We believe that either a single fixed royalty per centum should be indicated or that the basis of calculating a variable royalty (10 to 15 per centum), be spelled out.

Very truly yours,

E. E. Dawson

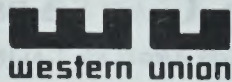
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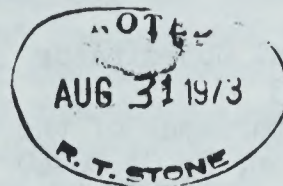


Mailgram



24

MR STONE GEOTHERMAL COORDINATOR
RM 5623 US DEPT OF THE INTERIOR
WASHINGTON DC 20240



THE GEOTHERMAL COMMITTEE OF THE WESTERN OIL AND GAS ASSOCIATION EXPRESSES ITS DEEP CONCERN AND DISAPPOINTMENT THAT SO FEW OF INDUSTRIES COMMENTS AND SUGGESTIONS, CONCERNING PROPOSED GEOTHERMAL REGULATIONS, HAVE BEEN HEATED OR INCORPORATED. IN PRESENT FORM, THE REGULATIONS ARE A STRONG DETERRENT TO SIGNIFICANT DEVELOPMENT OF A BADLY NEEDED ENERGY RESOURCE. WE RESUBMIT THE FOLLOWING:

1 SECTION 3201.2: REMOVAL OF RESTRICTIONS AND SIMPLIFICATION OF PROCEEDURES ON LEASE APPLICATIONS ARE ESSENTIAL IF SUFFICIENT LAND IS TO BE MADE AVAILABLE TO JUSTIFY TREMENDOUS CAPITOL INVESTMENT REQUIRED FOR DISCOVERY AND DEVELOPMENT OF GEOTHERMAL RESOURCES.

2 SECTION 3203.5: THIS SECTION SHOULD BE DELETED, SINCE NO REQUIRMENT FOR "DILIGENT EXPLORATION" WAS INCLUDED IN THE GEOTHERMAL STEAM ACT OF 1970. WE HAVE BEEN INFORMED THAT MOST OF THE CHANGES WE SUGGESTED COULD NOT BE MADE BECAUSE THE ACT CANNOT BE CHANGED BY THE REGULATIONS. THIS SHOULD APPLY TO YOUR DEPARTAMENT AS WELL AS TO US.

3 SECTIONS 3210.2-1 AND 270.34: THE SUBMISSION OF DETAILED DEVELOPMEN T PLAN BEFORE IT IS KNOWN WHETHER THERE IS A RESOURCE TO DEVELOP IS AT BEST AN EXERCISE OF THE IMAGINATION AND MAKES ABSOLUTELY NO SENSE TO US. THE TIME FOR DEVELOPMENT PLAN IS AFTER A DISCOVERY, WHEN REAL INFORMATION IS AVAILABLE.

4 SECTIONS 3203.1, 3204.3, 3205.3, ET AL: IN AT LEAST 15 INSTANCES "GEOTHERMAL STEAM" IS SPECIFICALLY STATED, WHEN "GEOTHERMAL RESOURCES" IS WHAT THE ACT INTENDED. IN SECTION RELATING TO ROYALTIES, ALL GEOTHERMAL RESOURCES HAVE BEEN CAREFULLY INCLUDED; THE SAME ATTENTION MUST BE GIVEN TO THOSE SECTIONS CONCERING LEASE TERMS, EXTENTIONS, CONVERSIONS, ETC.

IT IS APPARENT THAT THE REGULATIONS HAVE BEEN CAREFULLY DESIGNED TO EXTRACT MAXIMUM REVENUES FROM RENTS, ROYALTIES AND LEASE BONUS PAYMENTS RATHER THAN TO INCOURAGE DEVELOPMENT OF GEOTHERMAL RESOURCES. THE LONG TERM BEST INTEREST OF THE PUBLIC WOULD BE BETTER SERVED BY STRONG INCENTIVES TO THE DEVELOPMENT OF CRITICALLY NEEDED ALTERNATE ENERGY SOURCES, AND CERTAINLY NOT BY SHORT-SIGHTED ATTEMPTS TO INCREASE GOVERNMENT REVENUES

L H AXTELL CHAIRMAN GEOTHERMAL COMMITTEE WESTERN OIL AND GAS ASSOCIATION

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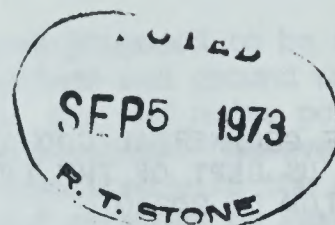
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WESTERN OIL AND GAS ASSOCIATION

609 SOUTH GRAND AVENUE • LOS ANGELES, CALIFORNIA 90017

(213) 624-6386

August 29, 1973



Geothermal Coordinator
Room 5623
U. S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Stone:

The Geothermal Committee of the Western Oil and Gas Association would like to take this opportunity to express its deep concern and disappointment that so few of the industry's comments and suggestions, concerning the proposed geothermal regulations, have been heeded or incorporated. In their present form, the regulations are a strong deterrent to the really significant development of a badly needed energy resource.

Although most of our previously filed comments still apply, we again emphasize and re-submit the following:

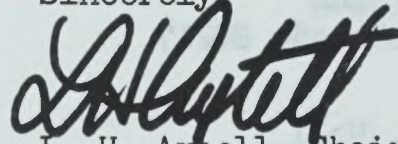
1. Section 3201.2: The addition of considerable language to this section has not solved the basic problem, which is that no large scale non-competitive leasing program will develop if the restrictions and procedures on applications are allowed to stand. The key factor in development of any natural resource is the availability of large amounts of land; without the land, private industry cannot justify the tremendous investment required if development is to take place.
2. Section 3203.5: The Geothermal Steam Act of 1970 makes no mention of requirements for "diligent exploration", and we strongly object to the arbitrary addition of this section to the regulations. We have been told that many of our objections were not accepted because the Act could not be changed by the regulations; this should apply to the government as well as to those of us who will be most affected by these regulations.
3. Sections 3210.2-1 & 270.34: The submission of a detailed plan, at the time of submission of an application, to include such things as well locations and proposed roads, makes absolutely no sense to us. The time for such a plan is after a discovery, when an operator has some real information, rather than just a good imagination.
4. Sections 3203.1, 3204.3, 3205.3, et al: In at least fifteen instances "geothermal steam" is specifically stated, when "geothermal resources" is what the Act intended. In sections relating to royalties, all geothermal resources have been carefully included - the same care and attention must be given to those sections concerning lease terms, extensions, conversions, readjustments, etc.

August 29, 1973

5. As a general objection, the Supervisor has been given too much latitude, with too few specific guidelines on such matters as methods of calculating royalties, qualification of "diligent exploration", etc.

It is apparent that the regulations have been carefully designed to extract maximum revenues from rents, royalties and lease bonus payments rather than to encourage the development of the nation's geothermal resources. The long-term interests of the public would be better served by strong incentives to the development of alternate energy sources, rather than short-sighted attempts to increase government revenues.

Sincerely



L. H. Axtell, Chairman
Geothermal Committee

LHA:cd

CC: Senator Paul J. Fannin, Arizona	Representative Harold T. Johnson,
Senator Alan Cranston, California	California
Senator Lee Metcalf, Montana	
Senator Alan Bible, Nevada	Representative Craig Hosmer,
Senator Mark O. Hatfield, Oregon	California
Senator Henry M. Jackson, Washington	
Senator Clifford P. Hansen, Wyoming	Representative Victor V. Veysey,
Senator Frank E. Moss, Utah	California
Senator Frank Church, Idaho	
Senator Floyd K. Haskell, Colorado	The Honorable John A. Love
Senator Pete V. Domenici, New Mexico	Director of Energy Policy Office

Mr. Rogers C. B. Morton, Secretary of the Interior
Mr. Stephen A. Wakefield, Assistant Secretary of the Interior
Mr. Henry W. Wright, Western Oil and Gas Association
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(213) 624-6386

WASHINGTON, NOVEMBER 29, 1972
MEMORANDUM FOR THE SECRETARY
FROM: BUREAU OF LAND MANAGEMENT
SUBJECT: GEOTHERMAL RESOURCES
LEASING ON PUBLIC, ACQUIRED AND WITHDRAWN LANDS
REVISION OF PROPOSED RULE

APPENDIX C

November 29, 1972, Proposed Regulations for Geothermal
Resources Leasing on Public, Acquired and Withdrawn Lands;
Revision of Proposed Rule

and

Summary of Comments Received and Departmental Responses

federal register

WEDNESDAY, NOVEMBER 29, 1972
WASHINGTON, D.C.

Volume 37 ■ Number 230

PART II



DEPARTMENT OF THE INTERIOR

Bureau of Land Management



GEOHERMAL RESOURCES

Leasing on Public, Acquired and
Withdrawn Lands; Revision of
Proposed Rule

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[43 CFR Parts 3000, 3045, 3104, 3200]

GEOTHERMAL RESOURCES

Leasing on Public, Acquired and Withdrawn Lands; Revision of Proposed Rule

The purpose of the revision in the proposed rule making for implementing the Geothermal Steam Act of December 24, 1970 (30 U.S.C. 1001-1025), is to provide the public with the revisions to the leasing regulations planned as a result of the public hearings and comments received on the Draft Environmental Statement and previously published proposed rules (36 F.R. 13722). The Act provides for the leasing of public lands for the purpose of geothermal resource exploration, development and production.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rule making process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, DC 20240, within 30 days of the date of publication of this notice in the **FEDERAL REGISTER**.

A Final Environmental Statement will be issued in accordance with the provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)) prior to promulgation of any leasing regulations.

1. Section 3000.0-5 of Subpart 3000, Chapter II, Title 43 of the Code of Federal Regulations is revised to read as follows:

§ 3000.0-5 Definitions.

As used in this subchapter:

(a) "Leasable minerals" means oil and gas. (1) Gas means any fluid, either combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions. (2) Oil or crude oil means any liquid hydrocarbon substance which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas, without resort to manufacturing process.

(b) "Geothermal resources" means geothermal steam and associated geothermal resources which include: (1) All products of geothermal processes, embracing indigenous steam, hot water and hot brines; (2) steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated energy found in geothermal formations; and (4) any byproducts derived from them.

(c) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium) which are found

in solution or in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(d) "Other leasable minerals" means (1) Coal, chlorides, sulphates, carbonates, borates, silicates, or nitrates of potassium and sodium; sulphur in the States of Louisiana and New Mexico; phosphate; and native asphalt, solid and semisolid bitumen and bituminous rock (including oil impregnated rock or sands from which oil is recoverable only by special treatment after the deposit is mined or quarried). (2) Solid (hardrock) minerals; minerals in acquired lands which would be subject to location under the U.S. mining laws if located in the public domain lands.

(e) "Secretary" means the Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(f) "Director" means the Director of the Bureau of Land Management or any person duly authorized to exercise the powers vested in that officer.

(g) "State Director" means the Director of a Bureau of Land Management State office.

(h) "Authorized officer" means any person authorized by law or by lawful delegation of authority in the Bureau of Land Management to perform the duties described.

(i) "Proper BLM office" means the Bureau of Land Management office having jurisdiction over the leased lands or lands subject to lease.

(j) "Commercial quantities" means quantities sufficient to pay a profit after all costs of production have been met.

(k) "Public domain lands" means original public domain lands which have never left Federal ownership; also, lands in Federal ownership which were obtained by the Government in exchange for public lands or for timber on such lands; also original public domain lands which have reverted to Federal ownership through operation of the public land laws.

(l) "Acquired lands" means lands which the United States obtains by deed through purchase or gift, or through condemnation proceedings. They are distinguished from public domain lands in that acquired lands may or may not have been originally owned by the Government. If originally owned by the Government such lands have been disposed of (patented) under the public land laws and thereafter reacquired by the United States.

(m) "Other lands" (1) "Withdrawn lands." Lands which have been withdrawn and dedicated to public purposes. (2) "Reserved lands." Lands which have been withdrawn from disposal and dedicated to a specific public purpose. (3) "Segregated lands." Lands included in a withdrawal or in an application or en-

ty which segregates them from operation of the public land laws.

2. Subpart 3045 of Chapter II, Title 43 of the Code of Federal Regulations is amended by substituting the words "oil and gas, or geothermal resources" for "oil and gas" wherever they appear throughout the subpart. As revised Subpart 3045 reads as follows:

Subpart 3045—Geophysical Exploration Operations (Oil and Gas or Geothermal Resources)

Sec.	
3045.0-1	Purposes.
3045.0-5	Definitions.
3045.0-7	Cross references.
3045.1	Notice of intent to conduct oil and gas or geothermal resources operations.
3045.1-1	Application.
3045.2	Completion of operations.
3045.3	Bond requirements.

§ 3045.0-1 Purposes.

The purpose of the regulations in this Subpart 3045 is to establish procedures to be followed in conducting exploration of the public land for oil and gas or geothermal resources. For exploratory operations for other leasable minerals, the lease or permit required by the appropriate regulations must be secured. The regulations in this subpart are not applicable to exploration operations conducted pursuant to oil and gas or geothermal resources lease, and also are not applicable to the exploration of public domain lands for minerals subject to location under the U.S. mining laws.

§ 3045.0-5 Definitions.

For the purpose of the regulations in this subpart:

(a) "Oil and gas or geothermal resources exploration" means any activity relating to the search for evidence of oil and gas or geothermal resources which requires physical presence upon the land and which may result in damage to public lands or resources thereon. It includes, but is not limited to, geophysical operations, construction of roads and trails, and cross-country transit by vehicle over public domain. It does not include the casual use of public lands for oil and gas or geothermal resources exploration. It does not include core drilling for subsurface geologic information or drilling for oil and gas or geothermal resources; these activities will only be authorized by the issuance of an oil and gas or geothermal resources lease. The regulations in this subpart, however, are not intended to prevent drilling operations necessary for placing explosive charges for seismic exploration, nor do they affect the exclusive right to "drill" for oil and gas or geothermal resources by a lessee upon his leased premises.

(b) "Public lands" means lands owned by the United States and administered by the Bureau of Land Management. It does not include retained mineral interest in lands, title to which has passed from the United States.

(c) "Casual use" means activities that involve practices which do not ordinarily lead to any appreciable disturbance

or damage to lands, resources, and improvements. For example, activities which do not involve use of heavy equipment or explosives and which do not involve vehicle movement except over established roads and trails are "casual use."

§ 3045.1 Notice of intent to conduct oil and gas or geothermal resources operations.

§ 3045.1-1 Application.

(a) *Forms and where filed.* Any person desiring to conduct oil and gas or geothermal resources exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file for approval with the authorized officer of the Bureau of Land Management for the district in which the public lands are located a "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations," on a form approved by the Director.

(b) *Requirements.* The "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" will contain the following:

(1) The name and address, including zip code, both of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities.

(2) A statement that the signers agree that exploration operations will be conducted pursuant to the terms and conditions listed on the approved form.

(3) A brief description of the type of operations which will be undertaken.

(4) A description of the lands to be explored, by township and range.

(5) Approximate date of commencement of operations.

§ 3045.2 Completion of operations.

Upon completion of the exploratory operations, there shall be filed with the District Manager a "Notice of Completion of Oil and Gas or Geothermal Resources Exploration Operations." Within 90 days after the filing of such "Notice of Completion," the District Manager shall notify the party who had conducted the operations whether all of the terms and conditions set out by the regulations in this subpart and in the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" have been complied with, or whether any additional measures must be taken to rectify any damage to the land, specifying the nature and extent thereof.

§ 3045.3 Bond requirements.

§ 3045.3-1 General.

(a) *Individual.* Simultaneously with the filing of the Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations, and before the entry is made on the land, the party or parties filing the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" must file with the District

Manager a surety company bond in the amount of not less than \$5,000, conditioned upon the full and faithful compliance, for each oil and gas or geothermal resources exploration operation, with all of the terms and conditions of the regulations in this subpart and of that notice.

(b) A party will be excused from compliance with the requirements of paragraph (a) of this section if he possesses either a nationwide bond in the amount of not less than \$50,000 covering all oil and gas or geothermal resources exploration operations or a statewide bond in the amount of not less than \$25,000 covering all oil and gas or geothermal resources exploration operations in the State in which the lands on which he has filed the Notice of Intent are situated.

§ 3045.3-2 Riders to existing bond forms.

(a) *Nationwide and statewide bonds.* Holders of nationwide and statewide oil and gas or Geothermal Resources lease bonds shall be permitted to amend their bonds to include exploration activities in lieu of furnishing additional bonds.

§ 3045.3-3 Termination of period of liability.

The District Manager will not give his consent to the cancellation of the bond if an individual bond was submitted, or to the termination of the period of liability if a State or nationwide bond was submitted, unless and until all of the terms and conditions of the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" have been complied with. Should the District Manager or any other authorized officer of the Bureau of Land Management fail to notify the party within 90 days from the filing of "Notice of Completion" that all terms and conditions have been complied with or that additional corrective measures must be taken to rehabilitate the land, the period of liability under an individual bond or the period of liability for a particular oil and gas or geothermal resources exploration operation under a State or nationwide bond shall automatically terminate on the 91st day.

3. Sections 3104.9, 3104.9-1, and 3104.9-5 of Subpart 3104, Chapter II, Title 43 of the Code of Federal Regulations are deleted and the following is substituted therefor: Section 3104.9 *Exploration Bond* (see 43 CFR 3045.3).

4. A new Group 3200 is added to Chapter II, Title 43 of the Code of Federal Regulations to read as follows:

Group 3200—Geothermal Resources Leasing

PART 3200—GEOTHERMAL RESOURCES LEASING; GENERAL

Subpart 3200—Geothermal Resources Leasing; General

Sec.	
3200.0-3	Authority.
3200.0-5	Definitions.
3200.0-6	Preleasing procedures.
3200.0-7	Cross reference.
3200.0-8	Use of surface.

Subpart 3201—Available Lands; Limitations; Unit Agreements

Sec.	
3201.1	Lands subject to geothermal leasing.
3201.1-1	General.
3201.1-2	Department of the Interior.
3201.1-3	Department of Agriculture.
3201.1-4	Federal Power Commission.
3201.1-5	Patented lands.
3201.1-6	Excepted areas.
3201.2	Acreage limitations.
3201.3	Leases within unit areas.

Subpart 3202—Qualifications of Lessees

3202.1	Who may hold leases.
3202.2	Statements required to be submitted.
3202.2-1	General.
3202.2-2	Guardian or trustee.
3202.2-3	Attorney-in-fact.
3202.2-4	Evidence previously filed.
3202.2-5	Showing as to sole party in interest.
3202.2-6	Heirs and devisees (estates).

Subpart 3203—Leasing Terms

3203.1	Primary and additional term.
3203.1-1	Dating of leases.
3203.1-2	Primary term.
3203.1-3	Additional term.
3203.1-4	Extensions.
3203.1-5	Conversion to mineral leases or mining claims.
3203.2	Lease acreage limitation.
3203.3	Consolidation of leases.
3203.4	Description of lands.
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Subpart 3200—Geothermal Resources Leasing; General

§ 3200.0-3 Authority.

These regulations are issued pursuant to the Geothermal Steam Act of 1970 (84 Stat. 1566; 30 U.S.C. 1001-1025) and rights to develop and utilize geothermal resources in land subject to these regulations may be acquired only in accordance with these regulations.

§ 3200.0-5 Definitions.

As used in Group 3200, the term:

(a) "The Act" means the Geothermal Steam Act of 1970;

(b) "Geothermal lease" means a lease issued under authority of the Act; and unless the context indicates otherwise, "lease" means a "geothermal lease";

(c) "Sole party in interest" means a party who is and will be vested with all legal and equitable rights under the lease. No one is, or shall be deemed to be, a sole party in interest with respect to a lease in which any other party has any interest in the lease;

(d) "Interest in the lease" means any interest whatever in a geothermal lease, including, but not limited to: A record title interest; a working interest; an operating right; a claim to any prospective or future advantage or benefit from a lease; a participation in any increment, issue, or profit which may be derived, or accrue in any manner, from the lease based upon, or pursuant to, any agreement or understanding in existence at the time when the offer is filed; and an agreement pertaining to any of the foregoing;

(e) "Supervisor" means a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

(f) "Primary term" means the first 10 years in the life of the lease, exclusive of any period of suspension of operations or production, or both.

(g) "Area of operation" means that area of the leased lands which is required for exploration, development and producing operations, and which is delineated on a map or plat which is made a part of the approved plan of operations. It encompasses the area generally needed for wells, flow lines, separators, surge tanks, drill pads, mud pits, workshops, and other such facilities used for on-project geothermal resources field exploration, development and production operations.

(h) "Geothermal resource province" means an area in which higher than

normal temperatures are likely to occur with depth and there is a reasonable possibility of finding reservoir rocks that will yield steam or heated fluids to wells. The classification of such a province is based on geologic inference and a determination that the area possesses one or more of the following characteristics:

(1) Volcanism of late Tertiary or Quaternary age—especially caldera structures, cones, and volcanic vents; (2) geysers, fumaroles, mud volcanoes, or thermal springs at least 40° F. higher than average ambient temperature; and (3) subsurface geothermal gradients generally in excess of two times normal, as reflected in deep water wells, oil well tests, and other test holes.

(i) "Potential geothermal resource area" means an area containing an inferred geothermal reservoir within a geothermal resource province which has not been determined to be a known geothermal resource area.

(j) "Known geothermal resource area" or "KGRA" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose. Any relevant data and information pertaining to the criteria, including without limitation any pertinent engineering and economic data, may be considered in classifying land for inclusion in a KGRA. Existence of a few, usually two or three, geothermal leases on Federal lands, or geothermal development on other than Federal lands, in a potential geothermal resource area within a geothermal resource province shall be deemed to be such a situation as to engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal resources in that area are good enough to warrant expenditures of money for that purpose, and will cause that potential geothermal resource area to become a KGRA. Absence of such leases or development shall not, however, exclude an area from determination as a KGRA.

§ 3200.0-6 Preleasing procedures.

(a) When an area is initially considered for geothermal leasing or when the need arises, the Director shall request other interested Bureaus and Federal agencies to prepare reports describing, to the extent known, resources contained within the general area and the potential effect of geothermal resources operations upon the resources of the area and its total environment.

(b) The Director, or the head of the agency charged with the administration of the surface, if he so elects, prior to the final selection of tracts for leasing, shall, when appropriate, evaluate fully the potential effect of the leasing program on the total environment, fish and other aquatic resources, wildlife habitat and populations, esthetics, recreation, and other resources in the entire area during

exploratory, developmental, and operational phases. This evaluation will consider the potential impact of the possible development and utilization of the geothermal resources including the construction of power generating plants and transmission facilities on lands which may or may not be included in a geothermal lease. To aid him in his evaluation and selection of tracts he may request and consider the views and recommendations of appropriate Federal agencies, may hold public hearings after appropriate notice, and may consult with State agencies, organizations, industries, and individuals, and shall consider all other potential uses of the land and its natural resources. The Director shall develop special terms and conditions to be included in leases when they are needed to protect the environment, to permit use of the land for other purposes, and to protect other natural resources. If tracts are offered for competitive leasing, any terms and conditions to be included in leases for such tracts shall be published in the notice announcing the availability of the land for leasing.

§ 3200.0-7 Cross reference.

(a) The regulations governing operations under geothermal leases are found in 30 CFR Part 270.

(b) The regulations setting forth the basic policies for management of the public lands are found in Part 1725 of this chapter.

§ 3200.0-8 Use of surface.

(a) A lessee shall be entitled to use for the production, utilization, and conservation of geothermal resources only so much of the surface of the leased lands as is deemed necessary for such purposes. The lessee shall have the right to use so much of the leased lands as may be deemed necessary for a power generation plant or a commercial or industrial facility, and may apply for the right to use so much of other Federal lands as may be deemed necessary for such purposes; however, any use of the leased lands or other Federal lands for a power generation plant or a commercial or industrial facility will be authorized only under a separate permit issued by the appropriate agency for that specific use and subject to all terms and conditions which it may include in that permit. The uses of the lands within the area of operation are subject to the supervision of the supervisor, and the uses of the remaining leased lands or other Federal lands are subject to the supervision of the appropriate surface management agency. The lessee shall not be entitled to use any mineral materials subject to the Materials Act except as provided by Part 3600 of this chapter.

(b) Operations under other leases or uses on the same lands shall not unreasonably interfere with or endanger operations under leases issued under these regulations nor shall operations under these regulations unreasonably interfere with or endanger operations under any lease, license, claim, permit, or other authorized use pursuant to the provisions of any other Act.

Subpart 3201—Available Lands; Limitations, Unit Agreements

§ 3201.1 Lands subject to geothermal leasing.

§ 3201.1-1 General.

Subject to the exceptions listed below, geothermal leases may be issued in combination or separately for (a) lands administered by the Secretary of the Interior; (b) national forest lands or other lands administered by the Department of Agriculture through the Forest Service; and (c) geothermal resources in lands which have been conveyed by the United States subject to a reservation to the United States of geothermal resources.

§ 3201.1-2 Department of the Interior.

(a) Except as provided in this section, leases may be issued in accordance with the regulations in this part for withdrawn lands, for acquired lands, and for geothermal resources in lands which have passed from Federal ownership subject to a reservation to the United States of the geothermal resources therein where such lands or resources are administered by the Secretary of the Interior.

(b) Notwithstanding any other provision in these regulations, geothermal leases shall not be issued for: (1) Lands which the Secretary has identified or may identify as being necessary to the performance of his or any other Federal agency's authorized functions, and on which geothermal resource development would in his judgment interfere with such functions; or (2) lands respecting which the Secretary has made or may make a finding that the issuance of geothermal leases would be contrary to the public interest. Upon receipt of an application for a geothermal lease affecting lands withdrawn under section 3 of the Reclamation Act of 1902 (43 U.S.C. 416) or any other appropriate authority, notice thereof and an opportunity to comment thereon shall be given to the head of the agency for whose benefit the withdrawal was made. Should the head of the agency object to the leasing of such withdrawn lands, the lands shall not be leased unless the Assistant Secretary for Public Land Management approves the offering after consultation with the appropriate Assistant Secretary or his representative.

Where leases are issued under Part 3210 or 3220 for lands neighboring such reserved lands, the lessees shall be required to perform such lease operations and take such measures as are prescribed by the Secretary for the protection of the Federal interests therein. Stipulations for this purpose will be incorporated in any applicable leases.

§ 3201.1-3 Department of Agriculture.

Leases for lands withdrawn or acquired in aid of functions of the Department of Agriculture, for example, lands administered by the Forest Service, may be issued by the Secretary of the Interior only with the consent of, and subject to such terms and conditions as may be pre-

scribed by, the head of that Department to insure adequate utilization of the lands for the purpose for which they were withdrawn or acquired.

§ 3201.1-4 Federal Power Commission.

Leases for lands to which section 24 of the Federal Power Act, as amended (16 U.S.C. 818), is applicable, may be issued by the Secretary of the Interior only with the consent of, and subject to, such terms and conditions as the Federal Power Commission may prescribe to insure adequate utilization of such lands for power and related purposes.

§ 3201.1-5 Patented lands.

(a) Geothermal resources in lands which have passed from Federal ownership subject to a reservation to the United States of geothermal resources therein may be leased under the regulations in this group subject to the provisions in this part and to such terms and conditions as may be prescribed by the authorized officer to insure adequate protection of the patented lands and any improvements thereon.

(b) Geothermal resources in lands the surface of which has passed from Federal ownership but in which the minerals have been reserved to the United States shall not be developed or produced except under terms and conditions prescribed by the Secretary and pursuant to any agreements made therefor while the question of the title to such resources is being resolved pursuant to the provisions of section 21(b) of the Act.

§ 3201.1-6 Excepted areas.

Leases shall not be issued for lands which are: (a) Administered under the National Park System; (b) within a national recreation area; (c) in a fish hatchery administered by the Secretary, wildlife refuge, wildlife range, game range, wildlife management area, or waterfowl production area, or for lands acquired or reserved for the protection and conservation of fish and wildlife which are threatened with extinction; or (d) tribally or individually owned Indian trust or restricted lands, within or without the boundaries of Indian reservations.

§ 3201.2 Acreage limitations.

(a) No person, association, corporation, or municipality shall take, hold, own, or control at one time, whether acquired directly from the Secretary or otherwise, any direct or indirect interest in Federal leases in any one State exceeding 20,480 acres. Nor may any person, association, or corporation be permitted to convert mineral leases, permits, applications therefor, or mining claims, pursuant to the provisions of section 4 (a)-(f) of the Act into geothermal leases for more than 10,240 acres.

(b) In computing acreage holdings or control, the accountable acreage of a party owning an undivided interest in a lease shall be that party's proportionate part of the total lease acreage. Likewise, the accountable acreage of a party owning an interest in a corporation or asso-

ciation shall be his proportionate part of the corporation's or association's accountable acreage except that no person shall be charged with his pro rata share of any acreage holdings of any association or corporation unless he is the beneficial owner of more than 20 per centum of the stock or other instruments of ownership or control of that association or corporation. Parties owning a royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with a similar percentage of the total lease acreage.

(c) An association shall not be deemed to exist between the parties to a contract for development of leased lands, whether or not coupled with an interest in the lease, nor between colessees, but each party to any such contract or each colessee will be charged with his proportionate interest in the lease. No holding of acreage in common by the same persons in excess of the maximum acreage specified in the law for any one lessee will be permitted.

§ 3201.3 Leases within unit areas.

Before issuance of a geothermal lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently but will be required to perform his operations in a manner which the Supervisor deems to be consistent with the unit operations.

Subpart 3202—Qualifications of Lessees

§ 3202.1 Who may hold leases.

Leases may be issued only to: (a) Citizens of the United States; (b) associations of such citizens; (c) corporations organized under the laws of the United States, any State or the District of Columbia; or (d) governmental units, including, without limitation, municipalities. The term "association" includes a partnership.

§ 3202.2 Statements required to be submitted.

§ 3202.2-1 General.

(a) Each applicant for a lease is required to submit with his application a statement that his interests, direct and indirect, in Federal geothermal leases and applications, do not exceed the acreage limitations prescribed in § 3201.2, together with a statement of his citizenship.

(b) If the applicant is an association or corporation the application must be accompanied by: (1) A statement showing that it is authorized to hold geothermal leases; (2) a statement that the officer executing the application is au-

thorized to act on behalf of the association or corporation; (3) a statement setting forth the State in which it was incorporated or formed and the names and addresses of all members or stockholders holding more than 20 percent of the association or corporation; and (4) a statement from each person owning or controlling more than 20 percent of the association or corporation setting forth his citizenship and his holdings.

(c) If the applicant is a municipality, the application must be accompanied by: (1) A statement showing that it is authorized to hold geothermal leases; (2) a statement that the officer executing the application is authorized to act on behalf of the municipality; and (3) a copy of its governing body's resolution authorizing such action.

§ 3202.2-2 Guardian or trustee.

(a) *Guardian.* If the application is made by a guardian, he must submit: (1) A certified copy of the court order authorizing him to act as guardian and, in behalf of his ward, to enter into contractual agreements and to fulfill all obligations arising under the lease; and (2) statements as to the citizenship and holdings under the Act of himself and of each person under his guardianship for whom the offer or nomination is made.

(b) *Trustee.* If the application is made by a trustee, he must submit a copy of the instrument establishing the trust or a certified copy of the court order authorizing him to act as trustee, in behalf of the beneficiary, as to all obligations arising under the lease; and statements as to the citizenship and holdings under the Act of himself and of each beneficiary.

§ 3202.2-3 Attorney-in-fact.

If an application is filed by an attorney-in-fact, it must be accompanied by evidence as to his authority to act.

§ 3202.2-4 Evidence previously filed.

Where the statements required by § 3202.2 have been previously filed a reference by serial number to the record in which they have been filed, together with a statement as to any amendments will be accepted.

§ 3202.2-5 Showing as to sole party in interest.

Each application must be accompanied either by a signed statement by the applicant that he is the sole party in interest, or by a signed statement by the applicant setting forth the names of all other persons who have an interest in the lease and their qualifications to hold a lease.

§ 3202.2-6 Heirs and devisees (estates).

If an applicant or a successful bidder dies before the lease is issued, the lease will be issued to the executor or administrator of the estate if probate of the estate has not been completed, and if probate has been completed, or is not required, to the heirs or devisees, provided there is filed in all cases an application to lease in compliance with the requirements of this section which will

be effective as of the effective date of the original application filed by the deceased. If there are any minor heirs or devisees, the application can only be made by their legal guardian or trustee in his name. Each such application must be accompanied by the following information:

(a) Where probate of the estate has not been completed:

(1) Evidence that the person who as executor or administrator submits the application, and bond form if a bond is required, has authority to act in that capacity and to sign the application and bond forms.

(2) A statement over the signature of each heir or devisee or, if the heir or devisee is a minor, over the signature of his legal guardian or trustee, concerning citizenship and holdings.

(3) Evidence that the heirs or devisees are the heirs or devisees of the deceased applicant or successful bidder and are the only heirs or devisees of the deceased.

(b) Where the executor or administrator has been discharged or no probate proceedings are required:

(1) A certified copy of the will or decree of distribution, if any, and if not, a statement signed by the heirs that they are the only heirs of the applicant or successful bidder and the provisions of the law of the deceased's last domicile showing that no probate is required.

(2) A statement over the signature of each of the heirs or devisees with reference to holdings and citizenship. If the heir or devisee is a minor, the statement must be over the signature of the guardian or trustee.

Subpart 3203—Leasing Terms

§ 3203.1 Primary and additional term.

§ 3203.1-1 Dating of leases.

All geothermal leases will be dated as of the first day of the month following the date on which the leases are signed on behalf of the lessor except that, where prior written request has been made, a lease may be dated as of the first day of the month within which it is so signed. A renewal lease will be dated from the termination of the original lease.

§ 3203.1-2 Primary term.

All leases shall be for a primary term of 10 years.

§ 3203.1-3 Additional term.

(a) If geothermal steam is produced or utilized in commercial quantities within the primary term of a lease, that lease shall continue for so long thereafter as geothermal steam is produced or utilized in commercial quantities, but the lease shall in no event continue for more than 40 years after the end of the primary term except that the lessee shall have a preferential right to a renewal of his lease for a second 40-year term upon such terms and conditions as the authorized officer deems appropriate, if at the end of the first 40-year term the lands are not needed for another purpose and geothermal steam is produced or utilized in commercial quantities.

(b) For the purposes of paragraph (a) of this section, production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of commencement of the primary term of the lease.

§ 3203.1-4 Extensions.

(a) A lease which has been extended by reason of production, or on which geothermal steam has been produced, and which has been determined by the Secretary to be incapable of further commercial production and utilization of geothermal steam may be further extended so long as one or more valuable byproducts are produced in commercial quantities but for not more than 5 years.

(b) Where the lessee commenced actual drilling operations prior to the end of the primary term and those operations are being diligently prosecuted at that time, a lease may also be extended for a period of five years and so long thereafter as geothermal steam is produced or utilized in commercial quantities (but for not more than 35 years).

(c) A lease committed to a cooperative plan, communitization agreement or a unit plan under or for which actual drilling operations were commenced prior to the end of the primary term of the lease, shall, if such operations are being diligently prosecuted at that time be extended for a period of five years and so long thereafter as geothermal steam is produced or utilized in commercial quantities (but for not more than thirty five years).

(d) Any lease on which there has been a suspension of operations or production, or both, under 30 CFR 270.17 shall continue in effect for the life of the suspension and, at the end of the suspension, shall be extended for a period equal to that portion of the primary term during which the suspension was in effect.

If, at the end of 40 years after the conclusion of the primary term, steam is being produced or utilized in commercial quantities and the lands are not needed for other purposes, the lessee shall have a right to a renewal of the lease for a second 40-year term on such terms and conditions as the Secretary deems appropriate.

§ 3203.1-5 Conversion to mineral leases or mining claims.

(a) If the byproducts being produced in commercial quantities are leaseable under the Mineral Leasing Act of February 25, 1920, as amended and supplemented (30 U.S.C. sections 181-287), or under the Mineral Leasing Act for Acquired Lands (30 U.S.C. sections 351-359), and the leasehold is primarily valuable for the production thereof, the lessee shall be entitled to convert his geothermal lease to a mineral lease under, and subject to all the terms and conditions of, the appropriate Act upon application

at any time before expiration of the lease extension by reason of byproduct production.

(b) The lessee shall be entitled to locate under the mining laws all minerals which are not leaseable and which would constitute a byproduct if commercial production or utilization of geothermal steam continued. The lessee in order to acquire the rights herein granted him shall complete the location of mineral claims within 90 days after the termination of the geothermal lease.

(c) Any lease converted under paragraph (a) of this section or under paragraph (b) of this section affecting lands withdrawn or acquired in aid of a function of a Federal department or agency, including the Department of the Interior, shall be subject to such additional terms and conditions as may be prescribed by that department or agency with respect to the additional operations or effects resulting from such conversion upon the utilization of the lands for the purpose for which they are administered.

§ 3203.2 Lease acreage limitation.

A geothermal lease may not embrace more than 2,560 acres in a reasonably compact area, except where a departure is occasioned by an irregular subdivision or subdivisions. In such event, the leased acreage may exceed 2,560 acres by an amount which is smaller than the amount by which the area would be less than 2,560 acres if the irregular subdivision were excluded. No lease will be issued for less than 1,280 acres, except at the discretion of the Secretary, or where a departure is occasioned by an irregular subdivision, or as provided for in Subpart 3230 of this chapter. In event of a departure, the leased acreage may be less than 1,280 acres by an amount which is smaller than the amount by which the area would be more than 1,280 acres if the irregular subdivision were added.

§ 3203.3 Consolidation of leases.

Two or more contiguous leases issued to the same lessee may be consolidated if the total combined acreage does not exceed 2,560 acres. Except where a departure is occasioned by an irregular subdivision or subdivisions as stated in § 3203.2.

§ 3203.4 Description of lands.

Applications and nominations shall include a description of the lands sought to be included in a geothermal lease. If the lands have been surveyed under the public land rectangular system, each application or nomination shall describe the lands by legal subdivision, section, township, and range. If the lands have not been so surveyed, each application shall describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to a monument or to a prominent topographic feature. When protracted surveys have been approved and the effective date thereof published in the FEDERAL REGISTER, each application or nomination for lands

shown on such protracted surveys, filed on or after such effective date, shall describe the lands according to the legal subdivision, section, township, and range shown on the approved protracted surveys.

§ 3203.5 Diligent exploration.

All geothermal leases will include provisions for the diligent exploration of the leased resources. Diligent exploration means exploration operations (subsequent to the issuance of the lease) on, or related to, the leased lands, including, but not limited to, operations such as geochemical surveys, heat flow measurements, core drilling, or drilling of a test well. Exploration operations, in order to qualify as diligent exploration, must be approved by the Supervisor, and evidence of all expenditures therefor and the results thereof must be submitted to the Supervisor in compliance with applicable regulations and Geothermal Resources Operational Orders or upon his request. Moreover, after the fifth year of the primary lease term, exploration operations, in order to qualify as diligent exploration for a year, must entail expenditures during that year equal to at least two times the sum of (a) the minimum annual rental required by statute, and (b) the amount of rental for that year in excess of the fifth year's rental, but in no event shall the required expenditures exceed twice the rental for the 10th year. However, any expenditures for diligent operations during the first 5 years of the lease and any expenditures for diligent operations during any subsequent year in excess of the minimum required expenditures for that year may be credited, in such proportions as the lessee may designate, against (1) expenditures needed to qualify exploration operations as diligent operations for future years, or (2) any rental requirement for that or any future years in excess of the fifth year's rental pursuant to § 3205.3-3.

Subpart 3204—Surface Management Requirements, Special Requirements

§ 3204.1 General.

A lessee shall comply with and be bound by the following general terms and conditions, the specific requirements contained in the lease stipulations and any GRO orders that may be issued pursuant to 30 CFR 270.11. Assuring compliance with the requirements of this section is the responsibility of the Supervisor as to the lands within the area of operations and is the responsibility of the appropriate land management agency as to the remaining lands in the lease.

(a) *Equal employment opportunity.* The lessee shall comply with Executive Order 11246, as amended, 30 F.R. 12319 (1965), and regulations issued pursuant thereto, 41 CFR Chapter 60 and Part 17 of this chapter.

(b) *Public access.* (1) The lessee shall permit free and unrestricted public access to and upon the leased lands for all lawful and proper purposes except in areas where such access would unduly interfere with operations under the lease

or would constitute a hazard to health and safety. Restrictions on access will not be allowed without prior approval.

(2) During construction, the lessee shall regulate public access and vehicular traffic to protect the public, wildlife, and livestock from hazards associated with the project. For this purpose, the lessee shall provide warnings, fencing, flag men, barricades, and other safety measures as appropriate.

(c) *Pollution abatement.* The lessee shall comply with all Federal and State standards with respect to the control of all forms of air, land, water, and noise pollution, including, but not limited to, the control of erosion and the disposal of liquid, solid, and gaseous wastes. The Supervisor may, in his discretion, establish additional and more stringent standards, and, if he does so, the lessee shall comply with those standards. The lessee, in addition to any other action required by those standards, shall take the following specific actions:

(1) *Pesticides and herbicides.* The lessee shall comply with all rules issued by the Department of the Interior and the Environmental Protection Agency pertaining to the use of poisonous substances on public lands.

(2) *Water pollution.* The lessee shall conduct lease operations and maintenance in a manner consistent with Federal and State water quality standards and public health and safety standards. Toxic materials shall not be released into any surface waters or underground waters. Reinjection of waste geothermal fluids into geothermal or other suitable aquifers may be permitted when approved by the Supervisor.

(3) *Air pollution.* The lessee shall control emissions from operations in accordance with Federal and State air quality standards.

(4) *Erosion control.* The lessee shall minimize disturbance to vegetation, drainage channels, and streambanks. The lessee shall employ such soil and resource conservation and protection measures on the leased lands as the Supervisor deems necessary.

(5) *Noise control.* The lessee shall control noise emissions from operations.

(d) *Sanitation and waste disposal.* The lessee shall remove or dispose of all waste generated in connection with the operation in a manner acceptable to the Supervisor. The term "waste" as used in this stipulation means all discarded matter, including but not limited to human waste, trash, garbage, refuse, petroleum products, and waste material resulting from the extraction and processing operation.

(e) *Land subsidence, seismic activity.* The lessee shall take precautions necessary to minimize land subsidence or seismic activity which could result from production of geothermal resources and the disposal of waste fluid where such activity could damage or curtail the use of the geothermal resources or other resources, or other uses of the land and take such measures as stipulated to: (1) monitor operations for land subsidence and for seismic activity; and (2) maintain, and when requested, make

available to the lessor, records of all monitoring activities.

(f) *Aesthetics.* The lessee shall take aesthetics into account in the planning, design, and construction of facilities on the leased premises.

(g) *Fish and wildlife.* The lessee shall employ such measures as are deemed necessary to protect fish and wildlife and their habitat.

(h) *Antiquities and historical sites.* The lessee shall conduct activities on discovered, known or suspected archeological, paleontological, or historical sites in accordance with lease terms or specific instructions.

(i) *Restoration.* The lessee shall provide for the restoration of all disturbed lands in an approved manner.

§ 3204.2 Waste prevention.

All leases shall be subject to the condition that the lessee will, in conducting his exploration, development, and operations, use all reasonable precautions to prevent waste of geothermal resources and other resources found or developed in the leased lands.

§ 3204.3 Readjustment of terms and conditions.

(a) (1) Except as otherwise provided by law, the terms and conditions of any geothermal lease may be readjusted as determined by the authorized officer at not less than 10-year intervals beginning 10 years after the date geothermal steam is produced. Each lease shall provide for such readjustments.

(2) The authorized officer shall give notice to the lessee of any proposed readjustment of the terms and conditions of the lease and the nature thereof, and unless the lessee files with the authorized officer an objection to the proposed terms or relinquishes the lease within 30 days after receipt of such notice, the lessee shall be deemed conclusively to have agreed to such terms and conditions. If the lessee files objections, and agreement cannot be reached between the authorized officer and the lessee within a period of 60 days, the lease may be terminated by either party. If the lessee files objections to the proposed readjusted terms and conditions, the existing terms and conditions will remain in effect until there has been an agreement between the authorized officer and the lessee on the new terms and conditions to be applied to the lease or until the lease is terminated.

(b) Any readjustment of the terms and conditions of any lease of lands withdrawn or acquired in aid of a function of a Federal department or agency may be made only with the approval of that other agency.

§ 3204.4 Reservation to the United States of oil, hydrocarbon gas, and helium.

The United States reserves the ownership of and the right to extract oil, hydrocarbon gas, and helium from all geothermal resources produced from lands leased under the Act. Whenever the right to extract oil, hydrocarbon gas, and helium, from geothermal resources pro-

duced from such lands is exercised, it shall be exercised so as to cause no substantial interference with the production of geothermal resources from such lands.

§ 3204.5 Compensation for drainage; compensatory royalty.

(a) Upon a determination by the Supervisor that lands owned by the United States are being drained of geothermal resources by wells drilled on adjacent or cornering lands, the authorized officer may execute agreements with the owners of adjacent or cornering lands whereby the United States, or the United States and its lessees, shall be compensated for such drainage, such agreements to be made with the consent of any lessee affected thereby. The precise nature of any agreement will depend on the conditions and circumstances involved in the particular case.

(b) Where land in any lease is being drained of its geothermal resources by a well either on a Federal lease issued at a lower rate of royalty or on land not the property of the United States, the lessee must drill and produce all wells necessary to protect the leased lands from drainage. In lieu of drilling such wells, the lessee may, with the consent of the Supervisor, pay compensatory royalty in the amount determined in accordance with 30 CFR Part 270.

§ 3204.6 Patented lands.

The terms and conditions of any geothermal resource lease for lands conveyed by the United States subject to a reservation to the United States of geothermal resources may be readjusted upon notification to the surface owner.

Subpart 3205—Service Charges, Rentals and Royalties.

§ 3205.1 Payments.

§ 3205.1-1 Form of remittance.

Remittances required under these regulations may be made by cash payment, check, certified check, bank draft, bank cashier's check, or money order. All remittances will be deposited as received.

§ 3205.1-2 Where submitted.

(a) *Rentals on nonproducing leases.* Rentals under all nonproducing leases issued shall be paid at the proper BLM office. All remittances to the Bureau of Land Management shall be made payable to the Bureau of Land Management.

(b) *Other payments.* All royalties on producing leases, communitized leases in producing well units, unitized leases in producing unit areas, leases on which compensatory royalty is payable and all payments under easements for directional drilling are to be paid to the Supervisor. All remittances to the Supervisor shall be made payable to the U.S. Geological Survey.

§ 3205.2 Service charges.

(a) *Competitive lease applications.* No service charge is required.

(b) *Noncompetitive lease applications.* Applications for noncompetitive leases must be accompanied by a nonrefunda-

ble service charge of \$50 for each application.

(c) *Assignments.* Applications for approval of an assignment of a lease or interest therein must be accompanied by a nonrefundable service charge of \$50 for each application.

(d) *Nominations.* No service charge is required.

§ 3205.3 Rentals and royalties.

§ 3205.3-1 Payment with application.

Each application must be accompanied by payment of the first year's rental of not less than \$1 per acre or fraction thereof based on the total acreage included in the application. An application accompanied by a payment of the first year's rental which is deficient by not more than 10 percent will be approved by the authorized officer provided all other requirements are met, but, if the additional rental is not paid within 30 days from notice, the application or the lease, if issued, will be canceled.

§ 3205.3-2 Payment of annual rental.

(a) *Annual rental in the amount specified in the lease* which shall be not less than \$1 per acre or fraction thereof must be paid in advance and must be received by the proper BLM office on or before the anniversary date of the lease. If there is no well on the leased lands capable of producing geothermal resources in commercial quantities, the failure to pay rental on or before the anniversary date shall terminate the lease by operation of law, except as provided by § 3245.2.

(b) If, on the anniversary date of the lease, less than a full year remains in the lease term, the rentals shall be payable in the same proportion as the period remaining in the lease term is to a full year. The rentals shall be prorated on a monthly basis for the full months, and on a daily basis for the fractional month remaining in the lease term. For the purpose of prorating rentals for a fractional month, each month will be deemed to consist of 30 days.

(c) If the term of a lease for which prorated rentals have been paid is further extended to or beyond the next anniversary date of the lease, rentals for the balance of the lease year shall be due and payable on the 1st day of the first month following the date through which the prorated rentals were paid. If the rentals are not paid for the balance of the lease year, the lease will be subject to cancellation. However, if the anniversary date occurs before the end of the notice period, the rental for the following lease year shall nevertheless be due on the anniversary date and failure to pay the full rental for that year on or before that date shall cause the lease to terminate automatically by operation of law except as provided by § 3245.2. The lessee shall not be relieved of liability for rental due for the balance of the previous lease year.

(d) If the payment is due on a day in which the proper BLM office to receive payment is not open, payment received on the next official working day will be deemed to be timely.

§ 3205.3 Escalating rental rates.

To encourage the orderly and timely development of geothermal leases, all leases issued pursuant to the regulations in this Group will provide that, beginning with the sixth year and for each year thereafter until the lease year beginning on or after the commencement of production of geothermal resources in commercial quantities, the rental will be set by the authorized officer as the amount of rental for the preceding year plus an additional rental of \$1 per acre, but the authorized officer may, upon a showing of sufficient justification by the lessee, waive the payment of all or any portion of the additional rental.

§ 3205.3-4 Fractional interests.

Rentals, minimum royalties, and royalties payable for lands in which the United States owns an undivided fractional interest shall be in the same proportion to the rentals, minimum royalties, and royalties provided for in § 3205.3, as the undivided fractional interest of the United States in the geothermal resources is to the full geothermal resources interest.

§ 3205.3-5 Royalty on production.

Royalty shall be paid at the following rates on geothermal resources:

(a) A royalty, as set forth in the lease, of not less than 10 per centum and not more than 15 per centum of the amount or value of steam, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee; (b) a royalty, as set forth in the lease, of not more than 5 per centum of any byproduct derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee, except that as to any byproduct which is a mineral named in section 1 of the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181), the rate of royalty for such mineral shall be the same as that provided in that Act and the maximum rate of royalty for such mineral shall not exceed the maximum royalty applicable under that Act; (c) In no event shall the royalty on any producing lease for any lease year, commencing with the lease year beginning on or after the commencement of production in commercial quantities, be less than \$2 per acre or fraction thereof, and this minimum royalty, in lieu of rental, shall be payable at the expiration of each lease year.

§ 3205.3-6 Royalty on commercially demineralized water.

All geothermal leases issued pursuant to the provisions of this group shall provide for the payment to the lessor of a royalty on commercially demineralized water at a rate to be specified in the lease of not more than 5 per centum of the value of such commercially demineralized water that has been sold or utilized by the lessee or is reasonably susceptible of sale or utilization by the lessee, except that no payment of a roy-

alty will be required on such water if it is used in plant operation for cooling or in the generation of electric energy or otherwise.

§ 3205.3-7 Waiver, suspension or reduction of rental or royalty.

(a) The authorized officer may waive, suspend, or reduce the rental or royalty for any lease or portion thereof in the interests of conservation and to encourage the greatest ultimate recovery of geothermal resources if he determines that this is necessary to promote development or that the lease cannot be successfully operated under the lease terms.

(b) An application hereunder shall be filed in triplicate with the Supervisor, and must: (1) Contain the serial number of the leases and the names of the lessee and operator; (2) show the number, location, and status of each well that has been drilled, a tabulated statement for each month covering a period of not less than 6 months prior to the date of filing the application of the aggregate amount of production subject to royalty computed in accordance with the operating regulations, the number of wells counted as producing each month, and the average production per well per day; (3) contain a detailed statement of expenses and costs of operating the lease, the income from the sale of any leased products and all facts tending to show whether the wells can be successfully operated using the royalty or rental fixed in the lease; and (4) where the application is for a reduction in royalty, furnish full information as to whether royalties or payments out of production are paid to others than to the United States, the amounts so paid, and the efforts made to reduce them. The applicant must also file agreements of the holders to a comparable reduction of all other royalties from the leasehold to an aggregate not in excess of one-half the Government royalties.

§ 3205.3-8 Application for and effect of suspension of operations and production.

(a) Applications by lessees for suspensions of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease) shall be filed in triplicate with the Supervisor, who is authorized to act on applications filed pursuant to this section and to terminate suspensions which have been or may be granted. Complete information must be furnished showing the necessity of the relief sought.

(b) A suspension shall take effect as of the time specified in the order of the Supervisor. Rental or minimum royalty payments will be suspended during any period of suspension of all operations and production directed, or assented to, by the Supervisor, beginning with the first day of the lease month in which the suspension of operations and production becomes effective or, if the suspension of operations and production becomes effective on any date other than the first day of a lease month, beginning with the first day of the lease month following

such effective date. The suspension of rental or royalty payments shall end on the first day of the lease month in which operations or production is resumed. Where rentals are creditable against royalties and have been paid in advance, proper credit will be allowed on the next rental or royalty due under the lease.

(c) No lease shall be deemed to expire by reason of a suspension of either operations or production, pursuant to any order or assent of the Supervisor.

(d) If there is a well on the leased premises capable of producing geothermal resources and all operations and production are suspended pursuant to any order of the Supervisor, approval of recommencement of drilling operations will terminate the suspension as to operations but not as to production, and will terminate both the period of suspension of rental and royalty payments provided in paragraph (b) of this section and the period of suspension for which an equivalent extension will be granted. However, as provided in paragraph (c) of this section, the lease will not be deemed to expire so long as the suspension of operations or production remains in effect.

(e) The relief authorized under this section may also be obtained for any leases included within an approved unit or cooperative plan of development and operation.

(f) See 30 CFR 270.17 for regulations concerning action of the Supervisor on applications filed pursuant to this section.

§ 3205.3-9 Readjustments.

The rentals and royalties of any geothermal lease may be readjusted at not less than 20-year intervals beginning 35 years after the date geothermal steam is produced as determined by the Supervisor. In the event of any such readjustment neither the rental nor royalty paid during the preceding period shall be increased by more than 50 per centum, and in no event shall the royalty payable exceed 22½ per centum. Each geothermal lease shall provide for such readjustment. The Supervisor will give notice of any proposed readjustment of rental or royalties. Unless the lessee relinquishes the lease within 30 days after receipt of such notice, he shall conclusively be deemed to have agreed to such terms and conditions. If the lessee files objections, and no agreement can be reached between the authorized officer and the lessee within a period of 60 days, the lease may be terminated by either party. If the lessee files objections to the proposed readjusted terms and conditions, the existing terms and conditions will remain in effect until there has been an agreement between the authorized officer and the lessee on the new terms and conditions to be applied to the lease or until the lease is terminated.

§ 3205.4 Rental and minimum royalty liability of lands committed to cooperative or unit plans.

§ 3205.4-1 Prior to production.

All lands within any lease committed to an approved cooperative or unit plan

shall at all times prior to production on any of the lands so committed remain liable for rental in accordance with § 3205.3-3.

§ 3205.4-2 After production.

As soon as production is obtained on or for any lands included in an approved cooperative or unit plan those lands which are included within the participating area of the producing well shall become liable for royalties in accordance with Subpart 3205. All other unitized lands, except those lands included in the lease on which production was obtained, shall remain liable for rental in accordance with § 3205.3-3.

Subpart 3206—Lease Bonds

§ 3206.1 Types of bonds and filing.

§ 3206.1-1 Types of bonds.

(a) Bonds shall be either corporate surety bonds or personal bonds except that bonds with individual sureties may be furnished for the protection of the entryman or owner of the surface rights.

(b) Lease compliance bond. The applicant for a noncompetitive lease or the successful bidder for a competitive lease must furnish, prior to the issuance of the lease, and thereafter maintain a corporate surety bond of not less than \$10,000 conditioned on compliance with all the terms of the lease.

(c) Protection bond. A lessee will be required prior to entry on the leased lands to furnish and maintain a bond of not less than \$5,000 for indemnification for all damages occasioned to persons or property as the result of lease operations.

§ 3206.1-2 Filing of bonds.

A single original copy of the bond on forms approved by the Director must be filed in the proper BLM office. Bonds may be filed with a noncompetitive lease application to expedite action thereon, or within 30 days after receipt of notice by the applicant of the bond requirement, or as required and directed by the authorized officer. For unit bond forms see 30 CFR Part 271.

§ 3206.2 Termination of period of liability.

The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled.

§ 3206.3 Operators bond.

An operator, or, if there are more than one for different portions of the lease, each operator, shall furnish a corporate surety bond or bonds in an amount prescribed by the Supervisor.

§ 3206.4 Qualified corporate sureties.

Treasury lists. A list of companies holding certificates of authority from the Secretary of the Treasury under the Act of July 30, 1947 (6 U.S.C. 6-13), as acceptable sureties on Federal bonds is published in the FEDERAL REGISTER annually.

§ 3206.5 Nationwide bond.

In lieu of bonds required under any of the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements may furnish a bond the amount of which must be not less than for \$150,000 for full nationwide coverage for all geothermal leases.

§ 3206.6 Statewide bond.

In lieu of any of the bonds required by the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements, may furnish a statewide bond, applicable to the State in which the leases are situated, the amount of which must be at the rate of not less than \$50,000 for each unit of coverage.

§ 3206.7 Default.

§ 3206.7-1 Payment by surety.

Where upon a default the surety makes payment to the Government of any indebtedness due under a lease, the face amount of the surety bond and the surety's liability thereunder shall be reduced by the amount of such payment.

§ 3206.7-2 Penalty.

Thereafter, upon penalty of cancellation of all of the leases covered by that bond, the principal shall post a new nationwide bond in the amount of \$150,000 or a unit bond, as the case may be, within 6 months after notice, or within such shorter period as the authorized officer may fix. However, in lieu thereof, the principal may within that time file separate bonds for each lease.

§ 3206.8 Applicability of provisions to existing bonds.

The provisions hereof may be made applicable to any nationwide or statewide bond in force at the time of the approval of the amendment of this paragraph by filing in the proper BLM office a written consent to that effect and an agreement to be bound by the provisions hereof executed by the principal and the surety. Upon receipt thereof the bond will be deemed to be subject to the provisions of this paragraph.

PART 3210—NONCOMPETITIVE LEASES

Subpart 3210—Noncompetitive Leases; General

Sec.

- 3210.1 Availability of land.
- 3210.2-1 Application.
- 3210.2-2 Withdrawal of application.
- 3210.2-3 Amendment to lease.
- 3210.3 Determination of priorities.
- 3210.4 Rejections.

Subpart 3211—Bureau Motion, Lands Previously Leased for Geothermal Resources

- 3211.1 Releasing of formerly leased lands.

Sec.

- 3211.2 Nominating procedures.
- 3211.3 Leasing units receiving multiple nominations.
- 3211.4 Leasing units receiving single nominations.
- 3211.5 Rental returned.

Subpart 3210—Noncompetitive Leases; General

§ 3210.1 Availability of land.

Lands and deposits subject to disposition under this part which are not within any KGRA will be available for leasing after the effective date of these regulations. All applications to lease the same lands which are filed between the effective date of these regulations and 30 days following that time will be considered to have been filed simultaneously, and the respective priority of the various applications will be determined in accordance with § 3210.3. An application will be deemed to be for the lease of the same lands as a previous application when it includes not less than half the acreage embraced in the previous application. The date and the time when the first application on a tract is filed will be recorded. (a) No action on any application will be taken until the conclusion of the initial 30-day period. At that time, the tracts in a potential geothermal resource area will be listed in the order in which the first application was filed on each. Final action will not be taken on any application filed on a tract until final action has been taken on all the applications on each tract within the same potential geothermal resource area preceding that tract on the list: *Provided, however,* That if, because of an appeal or for some other reason, final action is delayed on a tract having priority, final action may be taken on tracts having lower priority as long as that final action does not result in the issuance of so many leases within that prospective area as to cause it to become a KGRA. (b) Final action will not be taken on any application filed after the initial 30-day period until final action has been taken on all applications filed during that period on that potential geothermal resource area. If, after the conclusion of the 30-day period, applications are filed on more than one tract within a potential geothermal resource area on the same day, the tracts will be listed in the order in which the first application was filed on each. Final action will not be taken on any application filed on a tract until final action has been taken on all the applications on each tract within the same potential geothermal resource area preceding that tract on the list and on all applications on tracts in that potential geothermal resource area filed on any previous day: *Provided, however,* That if, because of an appeal or for some other reason, final action is delayed on a tract having priority, final action may be taken on tracts having lower priority as long as that final action does not result in the issuance of so many leases within that potential geothermal resource area as to cause it to become a KGRA. (c) An application

which, because it does not cover at least half the acreage included in a previous application, is not deemed to have been filed simultaneously with that previous application will be amended by the deletion of any acreage included in a lease by the time it becomes subject to final action, but the authorized officer, if he determines it desirable, may add to the application contiguous acreage not in excess of the acreage deleted.

§ 3210.2-1 Application.

No specific form is required. An application for a lease must be filed in the proper BLM office in duplicate for public lands and in triplicate for acquired lands. An application will be considered filed when it is received in the proper office during business hours. The application must include the following:

- (a) The applicant's name and address;
- (b) A statement of applicant's citizenship and qualifications;
- (c) A complete and accurate description of the lands applied for;
- (d) A proposed plan which shall include: (1) A map, or maps, available from State or Federal sources, showing the topography of the land applied for, on which the applicant shall show drainage patterns, present road and trail locations, present utility systems, proposed road and trail location, proposed well locations and potential surface disturbance, and (2) a narrative statement setting forth his proposed exploration plan and methods. Such plan shall provide for a program of diligent exploration as defined in § 3203.5 of this subchapter.

The narrative statement should also describe the measures proposed to be taken to prevent or control fire, soil erosion, pollution of surface and ground water, damage to fish and wildlife or other natural resources, air and noise pollution and hazards to public health and safety during lease activities; and

- (e) A statement of interest, direct or indirect, in other Federal geothermal leases or applications in the same State. Such total interest may not exceed 20,480 acres.

§ 3210.2-2 Withdrawal of application.

An application may not be withdrawn, either in whole or in part, unless the request is received by the proper BLM office before the lease has been signed on behalf of the United States even though the effective date of the lease is subsequent to the date of filing of the withdrawal, except where a separate conflicting lease has been signed on behalf of the United States covering the land described in the withdrawal.

§ 3210.2-3 Amendment to lease.

If any of the land applied for is open to filing when the application was filed but is omitted from the lease for any reason and thereafter becomes available for noncompetitive leasing, the original lease will be amended to include the omitted land unless, before the issuance of the amendment, the proper BLM office receives a withdrawal of the lessee's application with respect to such land or

such omitted lands have been determined to be within a KGRA.

§ 3210.3 Determination of priorities.

No lease shall be issued before final action has been taken on (a) any prior application to lease the land, (b) any subsequent application to lease the land that is based upon a claimed preferential right, and (c) any petition for the renewal or reinstatement of an existing or former lease on the land. If a lease is issued before final action has been taken on such applications and petitions, it shall be canceled, and the advance rental returned, after due notice to the lessee, where the applicant or petitioner is found to be qualified and entitled to receive a lease of the land. Multiple applications for lease of the same lands received in the mail or delivered on the same day will be deemed to have been simultaneously filed. After the receipt of applications and prior to the issuance of any lease, a determination shall be made as to whether or not the lands are within a KGRA. If the lands are then determined not to be within any KGRA, the right of priority to a noncompetitive geothermal lease, among those persons simultaneously filing therefor, will be determined by a public drawing.

§ 3210.4 Rejections.

If, after the filing of an application for a noncompetitive lease and before the issuance of a lease, or amendment thereto, pursuant to that application, the land embraced in the application becomes included within a KGRA, the application will be rejected as to such KGRA lands. The authorized officer retains discretion to reject an application for a noncompetitive lease even though the tract for which application is made is not determined to be within a KGRA.

Subpart 3211—Bureau Motion—Land Previously Leased for Geothermal Resources

§ 3211.1 Releasing of formerly leased lands.

From time to time the authorized officer will publish in the FEDERAL REGISTER, post in each proper BLM office, and provide appropriate news coverage of: (a) A list of leasing units composed of lands in canceled, expired, relinquished, or terminated leases which are not withdrawn from leasing or not included in a KGRA and which he has determined to be available for leasing; (b) a request for nomination for leasing; (c) terms and conditions on which a lease, if issued, will be conditioned; (d) address of proper BLM office; and (e) requirements for a complete nomination. Nominations of tracts should be addressed to the proper BLM office.

§ 3211.2 Nominating procedures.

No specific form is required. Only one complete leasing unit, identified by unit number, may be included in a nomination. Lands not on the published list may not be included in the nomination. The nomination must be accompanied by (a) the first year's advance rental, and (b) a

signed statement that the nominator will furnish the information required by these regulations within 15 days after notification that his nomination is the only one for the tract.

§ 3211.3 Leasing units receiving multiple nominations.

If the lands are determined not to be within any KGRA, multiple nominations for such lands within the prescribed period will be considered as simultaneous filings and each nominator will be given the opportunity to qualify for a lease in accordance with Subpart 3210. Where more than one nominator qualifies for a lease, the priority shall be determined by public drawing.

§ 3211.4 Leasing units receiving single nominations.

(a) Tracts receiving only one nomination, which have not been included within any KGRA, will be leased to the nominator, upon payment of a \$50 filing fee and upon his compliance with all applicable regulations, including those in Subpart 3210.

(b) If no nominations are received a lease may be issued pursuant to an application filed in accordance with these regulations.

§ 3211.5 Rental returned.

If an applicant or nominator withdraws his application or nomination or if his application or nomination to lease is rejected, the advance rental will be returned to him.

PART 3220—COMPETITIVE LEASES

Subpart 3220—Competitive Leases; General

Sec.	
3220.1	General.
3220.2	Nominations.
3220.3	Publication of notice of lease sale.
3220.4	Contents of notice of lease sale.
3220.5	Bidding requirements.
3220.6	Award of lease.

Subpart 3220—Competitive Leases; General

§ 3220.1 General.

(a) Lands within a KGRA, except as provided under § 3201.1, will be available for leasing on the effective date of these regulations.

(b) The authorized officer will accept nominations to lease, or may on his own motion from time to time call for nominations to lease. Nominations may be withdrawn at any time.

§ 3220.2 Nominations.

- (a) No specific form is required.
- (b) A nomination must be filed in the proper BLM office in duplicate for public lands and triplicate for acquired lands and must include the following:
 - (1) The nominator's name and address;
 - (2) A statement of citizenship and qualifications for lease;
 - (3) A description of the lands; and
 - (4) A statement of the interests, direct or indirect, held in other Federal geothermal leases or nominations in the same State.

§ 3220.3 Publication of notice of lease sale.

Where the Secretary determines to offer all or any of the nominated land for competitive leasing he will publish a notice of lease sale in a newspaper of general circulation in the area in which the lands to be leased are located once a week for 4 consecutive weeks, or for such other period as he may direct.

§ 3220.4 Contents of notice of lease sale.

The notice will state that the successful bidder will be required, prior to the issuance of a lease, to pay his proportionate share of the total cost of publication of the notice which shall be that portion of the total advertising cost that the number of parcels of land awarded to him bears to the number of parcels for which high bidders are declared. The notice will also state the time and place of sale, the manner in which bids may be submitted, the description of the lands and the terms and conditions of the sale, including royalty and rental rates.

§ 3220.5 Bidding requirements.

(a) A separate sealed bid must be submitted for each lease unit. Each bidder must submit with his bid a certified or cashier's check, bank draft, money order or cash in the amount of one-half of the amount bid together with proof of qualifications as required by these regulations.

(b) All bidders are warned against violation of the provisions of Title 18 U.S.C. section 1860 prohibiting unlawful combination or intimidation of bidders.

§ 3220.6 Award of lease.

All sealed bids shall be opened at the place, date, and hour specified in the notice. No bids will be accepted or rejected at that time, except as otherwise provided in these regulations as provided in Part 3230 of this chapter or elsewhere in these regulations, and the notice for invitation for bids covering the lands involving possible lease conversion rights. Leases will be awarded to the highest responsible qualified bidder. The right to reject any and all bids is reserved. If the authorized officer fails to accept the highest bid for a lease within 30 days after the date on which the bids are opened, all bids will be considered rejected. If the lease is awarded, three copies of the lease will be sent to the successful bidder who shall be required to execute them within 30 days from receipt thereof, to pay the first year's rental, the balance of the bonus bid, and file the required bond or bonds. Deposits on rejected bids will be returned. If the successful bidder fails to execute the lease or otherwise comply with the applicable regulations, his deposit will be forfeited and disposed of as other receipts under the Act. When the three copies of the lease are executed by the successful bidder and returned to the authorized officer, the lease will be executed by the authorized officer and a copy will be mailed to the successful bidder.

PART 3230—RIGHTS TO CONVERSION TO GEOTHERMAL LEASES OR APPLICATION FOR GEOTHERMAL LEASES

Subpart 3230—Rights to Conversion to Geothermal Leases or Application for Geothermal Leases; General

Sec.

- 3230.1 General.
 - 3230.1-1 Rights to conversion to geothermal leases.
 - 3230.1-2 Rights to conversion to applications for geothermal leases.
 - 3230.1-3 Land in which minerals are reserved to the United States.
 - 3230.1-4 Conflicting claims of rights to conversion to geothermal leases.
 - 3230.1-5 Evidence required to qualify for grant of rights to conversion to geothermal leases.
 - 3230.1-6 Method of leasing to owners of conversion rights to geothermal leases.
 - 3230.1-7 Acreage limitation.
- 3230.2 Qualifications.
- 3230.3 Applications.
 - 3230.3-1 Filing of application.
 - 3230.3-2 Statements required.
- 3230.4 Conversion to geothermal leases or to applications for geothermal leases.
 - 3230.4-1 Processing and adjudicating applications.
 - 3230.4-2 Approval.

Subpart 3230—Rights to Conversion to Geothermal Leases or Application for Geothermal Leases

§ 3230.1 General.

§ 3230.1-1 Rights to conversion to geothermal leases.

Where lands were on September 7, 1965, subject to valid leases or permits issued under the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181-287), or the Mineral Leasing Act for Acquired Lands, as amended (30 U.S.C. 351-358), or subject to existing mining claims located on or prior to September 7, 1965, the lessees, permittees, or claimants, or their successors in interest, if qualified to hold geothermal leases, shall have the right, subject to certain limitations as hereinafter provided, to convert such leases, permits or claims to geothermal leases covering the same lands.

§ 3230.1-2 Rights to conversion to applications for geothermal leases.

Where lands were subject to application for leases or permits under the mineral leasing laws referred to in § 3230.1-1 on September 7, 1965, the applicants may, subject to certain limitations as hereinafter provided, convert their applications to applications for geothermal leases having priorities dating from the time of filing such applications under said mineral leasing laws.

§ 3230.1-3 Land in which minerals are reserved to the United States.

Where a right to one of the forms of conversion referred to in § 3230.1-1 or § 3230.1-2 is claimed as to lands the sur-

face of which has passed from Federal ownership but in which the minerals have been reserved to the United States, final action on any claim to conversion rights under section 4 of the Act shall be held in abeyance until such time as the question of title to the geothermal resources in such lands has been resolved pursuant to the provisions of section 21(b) of the Act, unless the Secretary determines that it is in the public interest to make a determination of such claims at an earlier time, subject to the rights, if any, of non-Federal owners.

§ 3230.1-4 Conflicting claims of rights to conversion to geothermal leases.

Where there are conflicting claims of rights to conversion to geothermal leases based upon mineral leases, mineral permits, or mining claims embracing the same land, the date of issuance of the permit or lease or of recordation of the claim shall determine priority.

§ 3230.1-5 Evidence required to qualify for grant of rights to conversion to geothermal leases.

Any person claiming rights to conversion to a geothermal lease must show to the reasonable satisfaction of the authorized officer that substantial expenditures for the exploration, development or production of geothermal steam were made on the lands for which a lease is sought or on adjoining, adjacent or nearby lands, including both Federal and non-Federal lands.

§ 3230.1-6 Method of leasing to owners of conversion rights to geothermal leases.

(a) *Lands included within any KGRA—(1) Competitive lease.* Where lands have been included with any KGRA, the owner of a conversion right to a geothermal lease for such lands shall be entitled to the issuance of a competitive lease only in accordance with the provisions of subparagraph (2) of this paragraph.

(2) *Preference right.* Lands which have been included within any KGRA shall be leased only by competitive bidding in the manner prescribed in Subpart 3220 of this chapter. The person owning the right to conversion to a geothermal lease shall be informed by written notice of the highest bona fide bid submitted for the lease at the sale. If within thirty (30) days after he has received that written notice, the person owning the right to conversion to a geothermal lease shall inform the authorized officer that he wishes such a lease, pay an amount equal to the highest bona fide bid submitted, and pay the rental for the first year, a lease will be issued to him.

(b) *Lands not included within any KGRA—Noncompetitive lease.* Where lands have not been included within any KGRA, the owner of a conversion right to a geothermal lease for such lands, if otherwise qualified, shall be entitled to the issuance of a noncompetitive lease for such lands.

§ 3230.1-7 Acreage limitation.

No person shall be permitted to obtain, through conversion of mineral leases or prospecting permits, or applications therefor, or mining claims, leases for more than 10,240 acres, or a lease to any land not included in the lease, permit, application or claim converted.

§ 3230.2 Qualifications.

Persons who believe they are qualified under the Act to convert mineral leases or permits or existing mining claims to geothermal leases and persons who believe they are entitled to convert applications for mineral leases and permits to applications for geothermal leases shall comply with the procedures set forth below.

§ 3230.3 Applications.

§ 3230.3-1 Filing of application.

A written application shall have been filed with the proper BLM office on or before June 22, 1971, pursuant to the notice published in the FEDERAL REGISTER of January 15, 1971, 36 F.R. 623. If such an application has been filed and does not contain the information specified in § 3230.3-2 hereof, such information must be supplied by the applicant within 60 days of the effective date of these regulations.

§ 3230.3-2 Statements required.

(a) An application based on a valid lease or permit referred to in section 3230.1-1 hereof shall include the date of issuance, the State in which the lands are located, and the serial number of the lease or permit. An application based on a mining claim referred to in § 3230.1-1 shall include the name, location, legal description or reference sufficient to identify the lands on the ground, date of location and date and place of recordation of the mining claim (including volume and page) which the applicant seeks to convert to a geothermal lease. An application based on an application for a mineral lease or permit referred to in § 3230.1-1 shall include the date the application for the lease or permit was filed with the Bureau of Land Management and the location of the proper BLM office where the application was filed, and should indicate the serial number assigned to the application.

(b) An application shall include a description of the lands sought to be included in a geothermal lease. If the lands have been surveyed under the public land rectangular system, each application shall describe the lands by legal subdivision, section, township, and range. If the lands have not been so surveyed, or it is otherwise appropriate, each application shall describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to a monument or to a prominent topographic feature. When protracted surveys have been approved and the effective date thereof published in the FEDERAL REGISTER, each application for lands shown on such protracted surveys, filed on or after such effective date, shall de-

scribe the lands according to the legal subdivision, section, township, and range shown on the approved protracted surveys.

(c) An application shall be accompanied by a detailed statement showing: (1) The expenditures made for the exploration, development, or production of geothermal steam by the applicant on lands for which a geothermal lease is sought or on adjoining, adjacent or nearby Federal or non-Federal lands and the date or dates such expenditures were made, (2) the names and current addresses of the persons who actually performed the aforesaid exploration, development, or production work, (3) the geological, geophysical, and engineering data acquired in such exploration, development, and production which demonstrates, or tends to demonstrate the expenditures claimed, and (4) a map showing the location where the expenditures and improvements were made.

(d) The applicant shall file such additional information with respect to the application as requested by the authorized officer.

§ 3230.4 Conversion to geothermal leases or to applications for geothermal leases.

§ 3230.4-1 Processing and adjudicating applications.

Application for conversion to geothermal leases or to applications for geothermal leases together with all information and data submitted pursuant to § 3230.3-2 hereof and any other pertinent available information or data shall be reviewed by the authorized officer for the purpose of determining whether the required showing has been made, and thereafter the authorized officer shall prepare a proposed determination which shall be submitted to the Secretary.

§ 3230.4-2 Approval.

The authorized officer will make a determination that the applicant has or has not satisfactorily shown that he is entitled to receive the grant of a geothermal lease, or application for a geothermal lease.

PART 3240—RULES GOVERNING LEASES

Subpart 3240—Rules Governing Leases

Subpart 3241—Lease Extensions, Continuations, or Renewal

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Subpart 3241—Lease Extensions, Continuation, or Renewal

§ 3241.1 Applications.

An application for lease extension, continuation, or renewal shall be filed by the record title holder of the lease or by an assignee of the record title whose assignment has been filed for approval, or by an operator whose operating agreement has been filed for approval.

§ 3241.2 Forms.

An application for extension or renewal must be filed, in triplicate for public lands and in quadruplicate for acquired lands during the 90-day period prior to the expiration date of the lease, on a form approved by the Director or unofficial copies of that form in current use. The application must be accompanied by a service charge of \$50 which will be retained as a service charge even though the application is later withdrawn or rejected, and a statement setting forth the reasons the extension is

requested. The unofficial copies must be exact reproductions, on one sheet of both sides, of the official form.

§ 3241.3 Segregating effect of application.

The timely filing of an application by the lessee or other qualified party as provided under § 3241.1 for extension shall have the effect of segregating the leased lands from all other applications until the final action taken on the application is noted, for public lands, on the tract book, or, for acquired lands, on the official records relating thereto, of the proper BLM office.

§ 3241.4 Rejection.

If, during the 90-day period prior to the expiration date of the lease, the record title holder, assignee of record title, or operator files an application or request for extension, which is not on the prescribed form or unofficial copies thereof, or fails to file the prescribed number of copies, he shall be notified of the defect and allowed 30 days after receipt of notice in which to correct it. If the applicant fails to correct the defect within the time prescribed, the application will be rejected. The lands previously covered by the rejected application for extension will be subject to the filing of new lease offers only as provided in these regulations.

§ 3241.5 Expiration by operation of law.

Upon failure of the lessee or other person enumerated in § 3241.1 to file an application for extension within the specified period, the lease will expire at the end of its primary term without notice to the lessee. Notation of such expiration need not be made on the official records, but the lands previously covered by that expired lease will be subject to the filing of new lease offers only as provided in these regulations.

Subpart 3242—Assignments and Transfers

§ 3242.1 Assignments, transfers, interests, qualifications.

§ 3242.1-1 Record title assignments or transfers of leases or undivided lease interests.

(a) The record title of leases may be assigned as to all or part of the leased acreage, except that no assignment will be approved where (1) either the assigned or retained portions created by the assignment would be less than 640 acres, unless the total acreage in the lease being partially assigned is less than 1,280 acres occasioned by an irregular subdivision, as provided in § 3203.2 of this part, in which case the assigned and retained portions may be less than 640 acres by an amount which is smaller than the amount by which the area would be more than 640 acres if the irregular subdivision were added, or (2) an undivided interest of less than 10 percent would be created in the leased acreage. An exception to the minimum acreage provision of this section may be made by the Secretary where he finds such exception is

necessary in the interest of conservation of the resources.

(b) To obtain approval of a transfer affecting the record title of a geothermal lease, a request for such approval must be made not more than 90 days after the date of the final execution of the assignment by the parties.

(c) A working interest or operating right may be assigned, provided that the assigned interest or right, divided or undivided, vests in the holder only the right to explore, develop and produce geothermal resources from the leased lands to the extent of the interest assigned.

§ 3242.1-2 Qualifications.

(a) No assignment will be approved (1) if the assignee or any other party in interest is not qualified to take and hold a lease; (2) if a required bond is not filed; or (3) if the statement of interest required under § 3202.2-1(a) is not filed.

(b) an assignment to a minor other than an heir or devisee of a lessee will not be approved.

(c) The assignment must be accompanied by a signed statement by the assignee either (1) that he is the sole party in interest in the assignment, or (2) setting forth the names and qualifications of the other parties holding interests in the lease. Where the assignee is not the sole party in interest, separate statements must be signed by each of the other parties and by the assignee setting forth the nature and extent of the interest of each party and the nature of the agreement between them. These separate statements must be filed in the proper BLM office not later than 15 days after the filing of assignment.

(d) Where an attorney-in-fact or agent signs, on behalf of the assignor or assignee, the instrument of transfer or the application for approval, evidence of the authority of the attorney-in-fact or agent to sign such assignment or application must be furnished to the authorized officer.

(e) In order for the heir or devisee of the deceased holder of a lease, an operating agreement, or an overriding royalty interest in a producing lease, to be recognized by the authorized officer as the holder of that lease, agreement or interest, the appropriate showing required under the regulations in § 3202.2-6 must be furnished to the authorized officer.

§ 3242.2 Requirements for filing of assignments or transfers.

§ 3242.2-1 Place of filing and service charge.

A request for approval of any assignment or other instrument of transfer of a lease or interest therein must be filed in the proper BLM office and accompanied by a nonrefundable service charge of \$50. An application not accompanied by payment of such a service charge will not be accepted for filing.

§ 3242.2-2 Number of copies required.

Three copies of all instruments of assignment or transfer, and a single copy of any additional information relating to citizenship or qualifications

of corporations must be filed in the proper BLM office.

§ 3242.2-3 Time of filing assignments, transfers of leases, or undivided lease interests.

(a) Any instrument of transfer of a lease or of an interest therein, including an assignment of working interests, operating agreements, and operating rights, must be filed in the proper BLM office for approval within 90 days from the date of execution of that instrument and must contain all of the terms and conditions agreed upon by the parties thereto, together with evidence and statements similar to that required of an applicant under these regulations in this group.

(b) A separate instrument of assignment must be filed in the proper BLM office for each geothermal lease involving transfers of record title. When transfers to the same person, association, or corporation involve more than one geothermal lease, one request for approval and one showing as to the qualifications of the assignee will be sufficient.

§ 3242.2-4 Forms and statements.

A form approved by the Director, or unofficial copies of that form in current use, must be used for transfers and requests for approval referred to in this section and must be filed in triplicate for public lands and in quadruplicate for acquired lands. Unofficial copies used must be exact reproductions on one sheet of both sides of the officially approved one-page form, except that the copies must include: (a) The following statement above the signature of the assignee: "This form is submitted in lieu of the official form and contains all of the provisions thereof as of the date of filing of this assignment;" and (b) the name and address of the printer or other party issuing unofficial reproductions of the official form. The approved form may be used for an assignment which affects a transfer of the record title to all or part of a geothermal lease, but it is not to be used for any other type of transfer. The application for assignment shall be deemed to be approved upon execution by the authorized officer.

§ 3242.2-5 Description of lands.

Each instrument of transfer must describe the lands involved in the same manner as described in the lease.

§ 3242.3 Bonds.

Where an assignment does not create separate leases, the assignee, if the assignment so provides, may become a joint principal on the bond with the assignor. Any assignment which does not convey the assignor's record title in all of the lands in the lease must also be accompanied by consent of his surety to remain bound under the bond of record as to the lease retained by said assignor, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a nationwide or statewide bond, no additional showing by such party is necessary as to the bond requirement.

§ 3242.4 Approval.

Upon approval, an assignment shall be effective as of the first day of the lease month following the date of filing of the assignment required by this Subpart in the proper BLM office.

§ 3242.5 Continuing responsibility.

(a) The assignor and his surety will continue to be responsible for the performance of any obligation under the lease until the assignment is approved.

(b) Upon approval, the assignee and his surety shall be responsible for the performance of all lease obligations notwithstanding any terms in the assignment to the contrary.

§ 3242.6 Production payments.

If payments out of production are reserved, a statement must be submitted stating the details as to the amount, method of payment, and other pertinent items.

§ 3242.7 Overriding royalty interests.**§ 3242.7-1 General.**

(a) Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations.

(b) If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed in the proper BLM office describing the interest.

(c) Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a citizen of the United States, an association of such citizens, or a corporation organized under the laws of the United States or of one of the States or the District of Columbia, and that his interests in geothermal leases do not exceed the acreage limitations provided in these regulations.

(d) All assignments of overriding royalty interests must be filed for record in the proper BLM office within 90 days from the date of execution. Such interests will not receive formal approval.

§ 3242.7-2 Limitation of overriding royalties.

(a) Except as herein provided, an overriding royalty on the value of the output of all geothermal resources, or any of them, at the point of shipment to market may be created by assignment or otherwise: *Provided*, That, (1) the overriding royalty is not for less than one-fourth ($\frac{1}{4}$) of 1 percent of the value of such output, and does not exceed 50 percent of the rate of royalty due to the United States as specified in the geothermal lease, or as reduced pursuant to such lease, and (2) the overriding royalty, when added to overriding royalties previously created, does not exceed the maximum rate established hereof.

(b) The creation of an overriding royalty interest that does not conform to the requirements of paragraph (a) of this section shall be deemed a violation of the lease terms, unless the agreement creating overriding royalties provides (1) for a

prorated reduction of all overriding royalties so that the aggregate rate of royalties does not exceed the maximum rate established in paragraph (a) of this section and (2) for the suspension of an overriding royalty during any period when the royalties due to the United States have been suspended pursuant to the terms of the geothermal lease.

§ 3242.8 Lease account status; requirements.

Unless the lease account is in good financial standing as to the area covered by an assignment at the time the assignment and bond are filed, or is placed in good standing before the assignment is reached for action, the lease shall be subject to termination in accordance with these regulations.

§ 3242.9 Effect of assignment.

An assignment of the record title of the complete interest in a portion of the lands in a lease shall segregate the assigned and retained portions into separate and distinct leases. An assignment of an undivided interest in the entire leasehold shall not segregate the lease into separate or distinct leases.

Subpart 3243—Production and Use of Byproducts**§ 3243.1 General.**

Where the Supervisor determines that production, use, or conversion of geothermal steam under a geothermal lease is susceptible of producing a valuable byproduct or byproducts, including commercially demineralized water contained in or derived from such geothermal steam for beneficial use in accordance with applicable State water laws, the authorized officer shall require substantial beneficial production or use thereof, except where he determines that:

(a) Beneficial production or use is not in the interest of conservation of natural resources;

(b) Beneficial production or use would not be economically feasible; or

(c) Beneficial production and use should not be required for other reasons satisfactory to him.

§ 3243.2 Prior rights.

The production or use of such byproducts shall be subject to the rights of the holders of preexisting leases, permits or claims covering the same lands or the same minerals.

§ 3243.3 Production and use of commercially demineralized water as a byproduct, production, and use of other sources of water.**§ 3243.3-1 General.**

Except as provided in these regulations, or the lease, the lessee shall have the right to process fluids, including brine, condensate, and other fluids, which are associated with geothermal steam within lands subject to the geothermal lease for the purpose of developing, producing, and utilizing the commercially demineralized water recovered as a result of such processing.

§ 3243.3-2 Prohibition on production of commercially demineralized water.

The lessee shall not be authorized to engage in the primary production of commercially demineralized water from the produced fluids contained in or derived from geothermal steam referred to in § 3243.3-1, where such use would result in the undue waste of geothermal energy.

§ 3243.3-3 Water wells on geothermal areas.

All leases issued under these regulations shall be subject to the condition that, where the lessee finds only potable water in any well drilled for production of geothermal resources, the Secretary may, when the water is of such quality and quantity as to be valuable and useable for agricultural, domestic, or other purpose, acquire the casing in the well at the fair market value of the casing.

§ 3243.3-4 State water laws.

Nothing in these regulations shall constitute an express or implied claim or denial on the part of the Federal Government as to its exemption from State water laws.

Subpart 3244—Cooperative Conservation Provisions**§ 3244.1 Cooperative or unit plans.**

For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees and their representatives may unite with each other or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any geothermal resource area, or any part thereof (whether or not any part of that geothermal resource area is then subject to any cooperative or unit plan of development or operation). Applications to unitize shall be filed with the Supervisor who shall certify whether such plan is necessary or advisable in the public interest. The procedure in obtaining approval of a cooperative or unit plan of development, the provisions for the supervision of the cooperative or unit plan, and a suggested text of an agreement, are contained in 30 CFR Part 271.

§ 3244.2 Acreage chargeability.

All leases committed to any unit or cooperative plan approved or prescribed by the Supervisor shall be excepted in determining holdings or control for purposes of acreage chargeability. For the extension of leases committed to a unit plan, see Subpart 3203 of these regulations.

§ 3244.3 Communitization or drilling agreements.**§ 3244.3-1 Approval.**

(a) The Supervisor is authorized, when separate tracts under lease cannot be independently developed and operated in conformity with an established well-spacing or well-development program, to approve, or to require lessees to

enter into, communitization or drilling agreements providing for the apportionment of production or royalties among the separate tracts of land comprising the drilling or spacing unit for the lease, or any portion thereof, with other lands, whether or not owned by the United States, when in the public interest. Operations or production pursuant to such an agreement shall be deemed to be operations or production as to each lease committed thereto.

(b) Preliminary requests to communitize separate tracts shall be filed in triplicate with the Supervisor.

(c) Executed agreements shall be submitted to the Supervisor in sufficient number to permit retention of five copies after approval.

§ 3244.3-2 Requirements.

The agreement shall describe the separate tracts comprising the drilling or spacing unit, disclose the apportionment of the production or royalties to the several parties and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the United States. The agreement must be signed by or in behalf of all interested parties and will be effective only after approval by the Supervisor.

§ 3244.4 Operating, drilling, development contracts or a combination for joint operations.

§ 3244.4-1 Approval.

(a) The Secretary may on such conditions as he may prescribe, approve operating, drilling, or development contracts made by one or more geothermal lessees, with one or more persons, associations, or corporation whenever he shall determine that such contracts are required for the conservation of natural resources or in the best interest of the United States.

(b) The Secretary may approve a combination for joint operations, pursuant to which lessees may combine their interests in leases for the purpose of constructing and carrying on the business of producing geothermal resources, or of establishing and constructing common lines to be used by them jointly in the transmission or transportation of geothermal resources from their several wells or from the wells of other lessees, or to increase the acreage which may be acquired or held under the provisions of the Act relating to competitive leases.

(c) Contracts submitted for approval under this section should be filed with the Supervisor together with enough copies to permit retention of five copies after approval.

(d) The authority of the Secretary to approve operating, drilling, or development contracts or a combination for joint operations, without regard to acreage limitations ordinarily will be exercised only to permit operators to enter into contracts with a number of lessees sufficient to justify operations on a large scale for the discovery, development, production, or transmission, transportation, or utilization of geothermal resources, and to finance the same.

§ 3244.4-2 Requirements.

(a) The contract must be accompanied by a statement showing all the interests held by the contractor in the area or field and the proposed or agreed plan of operation or development of the field. All the contracts held by the same contractor in the area or field should be submitted for approval at the same time, and full disclosure of the project made. Complete details must be furnished in order that the Secretary may have facts upon which to make a definite determination in accordance herewith and to prescribe the conditions on which approval of the contracts shall be made.

(b) The application must show a reasonable need for the combination and that it will not result in any concentration of control over the production or sale of geothermal resources which would be inconsistent with the antimonopoly provisions of law.

§ 3244.4-3 Acreage chargeability.

All leases operated under approved operating, drilling or development contracts or a combination for joint operations and interests thereunder, shall be excepted in determining holdings or control for purposes of acreage chargeability.

Subpart 3245—Terminations and Expirations

§ 3245.1 Relinquishments.

(a) A lease, or any legal subdivision of the area covered by such lease, may be surrendered by the record title holder by filing a written relinquishment in triplicate in the proper BLM office. The relinquishment must: (1) describe the lands to be relinquished as described in the lease; (2) include a statement as to whether the relinquished lands had been disturbed and if so whether they were restored as prescribed by the terms of the lease; (3) state whether wells had been drilled on the lands and if so whether they had been placed in condition for abandonment; and (4) furnish a statement that all moneys due and payable to workmen employed on the leased premises have been paid.

(b) A relinquishment shall take effect on the date it is filed, subject to the continued obligation of the lessee and his surety: (1) To make payments of all accruing rentals and royalties; (2) to place all wells on the land to be relinquished in condition for suspension of operations or abandonment as prescribed by the Supervisor; (3) to restore the surface resources in accordance with all regulations and the terms of the lease; and (4) to comply with all other environmental stipulations provided for by such regulations or lease. A statement must be furnished that all moneys due and payable to workmen employed on the leased premises have been paid.

§ 3245.2 Automatic terminations and reinstatements.

§ 3245.2-1 General.

Except as provided in § 3245.2-2 any lease will automatically terminate by operation of law if the lessee fails to pay the rental on or before the anniversary

date of such lease. However, if the time for payment falls upon any day in which the proper office to receive payment is not open, payment received on the next official working day shall be deemed to be timely. The termination of the lease for failure to pay the rental must be noted on the official records of the proper BLM office. Upon such notation the lands included in such lease will become subject to leasing as provided for in Subpart 3211 of these regulations.

§ 3245.2-2 Exceptions.

(a) *Nominal deficiency.* If the rental payment due under a lease is paid on or before its anniversary date but the amount of the payment is deficient and the deficiency is nominal, the lease shall not have automatically terminated unless the lessee fails to pay the deficiency within the period prescribed in a Notice of Deficiency, or by the due date, whichever is later. A deficiency is nominal if it is not more than \$10 or one percentum (1%) of the total payment due, whichever is more. The authorized officer shall send a Notice of Deficiency to the lessee on an approved form. The Notice shall be sent by certified mail, return receipt requested, and shall allow the lessee 15 days from the date of receipt to submit the full balance due to the proper BLM office. If the payment called for in the notice is not made within the time allowed, the lease will have terminated by operation of law as of its anniversary date.

(b) *Reinstatements.* (1) Except as hereinafter provided, the authorized officer may reinstate a lease which has terminated automatically for failure to pay the full amount of rental due on or before the anniversary date, if it is shown to his satisfaction that such failure was either justifiable or not due to a lack of reasonable diligence on the part of the lessee; and a petition for reinstatement, together with the required rental, including any back rental which has accrued from the date of termination of the lease, is filed with the proper BLM office.

(2) The burden of showing that the failure to pay on or before the anniversary date was justifiable or not due to lack of reasonable diligence will be on the lessee. Reasonable diligence normally requires sending or delivering payments sufficiently in advance of the anniversary date to account for normal delays in the collection, transmittal, and delivery of the payment. The authorized officer may require evidence, such as post office receipts, of the time of sending or delivery of payments.

(3) Under no conditions will a lease be reinstated if (i) a valid lease has been issued prior to the filing of a petition for reinstatement affecting any of the lands covered by the terminated lease, or (ii) the interest in the lands has been withdrawn, disposed of, or has otherwise become unavailable for leasing. However, the authorized officer will not issue a new lease for lands covered by a lease which terminated automatically until 90 days after the date of termination.

(4) Reinstatement of terminated leases is discretionary with the Secre-

tary. The basic criterion in accordance with which this discretion will be exercised is whether the Secretary would be willing to issue a lease if a new lease offer for the same land were under consideration.

§ 3245.3 Termination of lease for non-compliance with regulations or lease terms; notice; hearing.

A lease may be terminated by the authorized officer for any violation of these regulations, the regulations in 30 CFR Part 270, or the lease terms, 30 days after receipt by the lessee of notice from the authorized officer of the violation, unless (a) the violation has been corrected, or (b) the violation is one that cannot be corrected within the notice period and the lessee has in good faith commenced within the notice period to correct the violation and thereafter proceeds diligently to complete the correction. A lessee shall be entitled to a hearing on the matter of any such claimed violation or proposed termination of lease if a request for

a hearing is made to the authorized officer within the 30-day period after notice. The procedures with respect to notice of such hearing and the conduct thereof, and with respect to appeals from decisions of hearing examiners upon such hearings, shall follow insofar as practicable the procedural rules applicable to hearings and appeals in public lands cases within the jurisdiction of the Board of Land Appeals, Office of Hearings and Appeals, contained in Department Hearings and Appeals Procedures, Part 4 of this title. The period for correction of violation or commencement to correct a violation of regulations or of lease terms, as aforesaid, shall be extended to 30 days after the lessee's receipt of the hearing examiner's decision upon such a hearing if the hearing examiner shall find that a violation exists.

§ 3245.4 Removal of materials and supplies upon termination of lease.

Upon the expiration of the lease, or the earlier termination thereof pursuant to

this subpart, the lessee shall have the privilege at any time within a period of ninety (90) days thereafter of removing from the premises any materials, tools, appliances, machinery, structures, and equipment other than improvements needed for producing wells. Any materials, tools, appliances, machinery, structures, and equipment subject to removal, but not removed within the 90-day period, or any extension thereof that may be granted because of adverse climatic conditions during that period, shall, at the option of the Supervisor, become property of the lessor, but the lessee shall remove any or all such property where so directed by the lessor.

Dated: November 22, 1972.

W. W. LYONS,
Deputy Assistant Secretary
of the Interior.

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RESPONSE TO COMMENTS RECEIVED PERTAINING TO THE GEOTHERMAL RESOURCES
LEASING REGULATIONS, 43 CFR 3200, PUBLISHED IN THE FEDERAL REGISTER
ON NOVEMBER 29, 1972, AS PROPOSED RULE MAKING (37 F.R. 230).

Comments that were not specific as to a particular section or those which included generalized comments in connection with a particular section are being considered as general comments.

General Comments

Comment Center for Law and Social Policy, (11); Sierra Club, (25);
United States Conference of Mayors, (51).

The regulations reflect the Department's isolated view of geothermal resources. Geothermal operations must be considered within the scope of the total environmental system. The Department has failed, for example, to require public input and hearings with respect to site selections for leasing and adoption of environmental safeguards, or compliance with local environmental regulations; and has unwisely delegated environmental policy making to supervisors in the field. None of the revisions in the proposed regulations alters our previously expressed conclusion that such regulations are inadequate.

Response

Section 3200.06 has been modified to more positively provide for environmental evaluations and environmental impact statements. The Director of BLM, or the head of the agency charged with the administration of the surface, shall evaluate fully the potential effects of the leasing program as set forth in this section of the regulations. The proposed regulations are considered adequate and they provide for needed public input as warranted for each selection of tracts for leasing.

Comment Ellis T. Hammett, (27).

The secrecy period, six months or whatever for withholding information, should be eliminated. The open file rule would make all of the records available to the public.

Response

No action taken on comment. Section 19 of the Act provides: "Data given to any department or agency as confidential under law shall not be furnished in any fashion which identifies or tends to identify the business entity whose activities are the subject of such data or the person or persons who furnished such information."

Comment State of Nevada (32).

The regulations continue to be oriented strongly toward development of Geothermal Steam. The regulations should encourage comprehensive development of the resource with equal consideration given to mineral byproducts and water supply. Some development of geothermal resources for water supply may be undertaken by, among others, municipalities or by other non-commercial entities.

Response

No action taken on comment. Section 3 of the Geothermal Steam Act authorizes leases for the development of geothermal steam and associated geothermal resources. While the initial development interest centers on the electrical energy generation potential, appropriate attention will be given to other potential resource values. Section 270.61 of the proposed regulations provides that the lessee shall furnish periodic tests showing the content of byproducts in the produced geothermal fluids and gases. Section 3204.2 provides that the lessee will use all reasonable precautions to prevent waste of geothermal resources or other resources found or developed in the leased lands. Section 3242.1 provides that where the Supervisor determines that production, use, or conversion of geothermal steam under a geothermal lease is susceptible of producing a valuable byproduct or byproducts, including commercially demineralized water, the authorized officer shall require substantial beneficial production or use thereof unless such production is not in the interest of natural resource conservation, economically feasible, or should not be required for other reasons. Each lease area will have to be individually considered under existing or newly developed technologies, systems, and other factors to determine when byproduct production is feasible and should be required. The production of water is covered in Section 3242.2. Department of Interior mineral management objectives are set forth in Volume I, Chapter 1, Section D of the final environmental impact statement.

When the lease has been determined to be incapable of further commercial production, utilization of geothermal steam and commercial byproduct production, the lease will be terminated. The lessee has the option to convert his geothermal resources lease to a lease or mining claim prior to such termination.

Comment State of Oregon (12).

The regulations are more concerned about maximizing the revenue to the Federal Government than in developing the industry. Several restrictions and extra burdens are placed on the explorers that are not required for other leasable resources. Unless these regulations are modified to encourage development, rather than charge all the traffic will bear, any significant development will be delayed for several more years.

Response

Partial action has been taken on this comment. The Geothermal Steam Act authorizes the Secretary of the Interior to make disposition of geothermal steam and associated geothermal resources subject to such rules and regulations as he may deem appropriate to carry out the provisions of the Act. The Department's mineral management policy is designed to assure

- (1) Orderly and timely resource development
- (2) Protection of the environment
- (3) Receipt of fair market value

(For further detail, see Volume I, Chapter I, Section D of the final environmental impact statement.)

The proposed regulations are designed to provide for simultaneous accomplishment of these objectives consistent with the provisions of the Geothermal Steam Act. In most instances, the factors associated with objectives (1) and (2) above will be significant considerations relative to the establishment of fair market value.

Comment Pacific Gas and Electric Company (24).

It is unnecessary to add further environmental regulations in view of presently existing Federal and State regulations, and the overlapping of jurisdiction would only lead to confusion. The proposed regulations will unreasonably handicap development of this desirable resource. It is the distinct possibility that the economic competitive edge of geothermal energy might be lost in meeting the maze of regulations.

Response

No action taken on comment. These regulations, as proposed, are considered necessary to protect the Federal lands, resources, and the environment. The regulations provide for consideration to be given to all existing Federal and State environmental requirements in formulating lease terms and conditions.

Comment American Thermal Resources, Inc., (13).

Appeals procedures should be included in the leasing regulations as there are several sections which allow the authorized officer to act arbitrarily without providing the lessee or applicant with a clearly defined course of appeal to such a decision.

Response

Action taken on the comment. 43 CFR 3000.4 was modified to reflect organizational changes. The provisions of Section 3000.4 have been expressly made applicable to Sections 3204.3 and 3205.3-g of these regulations. Any party adversely affected by any official action or decision has the right to appeal such action or decision pursuant to the provisions of Group 1800, Chapter II of Title 43, CFR.

Comment State of California, (22).

Nowhere in the documents are there provisions to involve the State governments in the regulation of geothermal resources on land administered by the Federal Government. At the very least, the regulations should be equal to or above State requirements, and provisions should be included whereby State regulatory agencies could obtain and exchange exploration and development information gained on Federal land such as logs, well histories, surveys, and other pertinent data.

Response

No action taken on the comment. The regulations provide that the Director may consult with State agencies regarding leasing of Federal lands and their resources. Procedures implementing these regulations will require appropriate State agency participation in the decision making process. State pollution standards will be utilized as appropriate.

Comment Western Oil and Gas Association, (16); Phillips Petroleum Company, (19); Chevron Oil Company, (36).

Various phrases "geothermal steam," "steam or heated fluids," "steam," and "geothermal steam and associated geothermal resources" are used without a clear definition as to what each term means.

Response

No action taken on comment. The various phrases cited in the regulations are in fact cited from the Act and it is considered unnecessary to further define.

Comment Ellis T. Hammett, (27).

The \$1 acre recommended rental seems appropriate except that it favors the "large bankroll." Since a hot flow may be stream-like, the cost of leasing thousands of acres could be prohibitive. It is therefore recommended that some type of explorative program be considered which would permit traversing U. S. Government lands, whether leased or not, to determine the presence of potential geothermal energy. All such information obtained should be open to the public with the lessee and explorer rights protected.

Response

No action taken on comment. Subpart 3209 of the regulations provides for exploration operations on public lands.

Comment Ellis T. Hammett, (27).

Each full-time staffed Department office should have all information, concerning its respective area, on file and available to the public at that office.

Response

No action taken on the comment in these regulations. Bureau of Land Management procedures provide for land-use status plats to be available in the proper BLM office.

Comment Ellis T. Hammett, (27).

Senator Jackson's proposal of a Federal energy czar should be adopted. Energy minerals should be developed and used under his direction. Environmental resource conservation and development should be under such a position.

Response

No action taken on comment. Recommendation not applicable to these regulations. However, the President in his Energy Message of April 18, 1973, recognized the need for a more fundamental reorganization and will, as a consequence, propose legislation to establish a Department of Energy and Natural Resources (DENR) which will, if enacted, provide leadership across the entire range of national energy. He also has established in the Executive Office of the President an Energy Policy Office (Energy and Natural Resource Message, June 29, 1973).

Comment Northwest Public Power Association, (30).

Geothermal resources underlying public lands are public resources which belong to the people of the United States. The right of private exploitation of such public resources for private gain should be granted only as such development is proved to be in the public interest and under conditions which assure that the people can reclaim their resources for public use in accordance with procedures which protect the private investment.

Response

No action taken on the comment. The regulations are considered adequate to accommodate the comment. The discussion of alternatives in the final environmental impact statement has been expanded to include alternative resource exploration and development approaches (Volume I, Chapter IV).

Subpart 3045 General (Now Subpart 3209)

Comment Anschutz Corp., (17).

Paragraph 3045.0-6 and -7 left out. Cross reference to 43 CFR 3104.9 and 3104.15 left out.

Response

No action taken on comment. The regulations, as drafted, eliminate the need for cross referencing. The cross referenced regulations are now found in 43 CFR 3209.3.

Subpart 3045 General (Now Subpart 3209)

Comment Alex M. Gray, (26).

These regulations should provide for public hearings, review of any submitted statements or documents, or issuance of an impact statement as provided for under the National Environmental Policy Act.

Response

No action taken on the comment. The proposed regulations are considered adequate to protect the environment. The "Notice of Intent to Conduct Exploration Operations" will contain those terms and conditions deemed necessary for the conservation of the resources and protection of the environment. The final environmental impact statement has been expanded to more fully discuss exploration and development environmental protection measures and includes a sample of the proposed "Notice of Intent" form (Volume I, Chapter III, Section C).

Section 3045.0-5(a) (Now 3209.0-5(2))

Comment American Thermal Resources, Inc., (13); State of California, (22).

Under Geothermal Resources Exploration, a provision should be included to allow the drilling of temperature gradient wells.

Response

Action taken on the comment. The regulations have been revised to permit drilling of shallow temperature gradient wells pursuant to terms and conditions that will protect the environment.

Section 3045.0-5(c) (Now 3209.0-5(c))

Comment Western Oil and Gas Association, (16).

The definition of "casual use" should be broadened to clearly permit geochemical and non-explosive geophysical surveys on public lands. Such surveys are a "casual use" even though they do involve some vehicle movement outside established roads and trails.

Response

No action taken on comment. The regulations as drafted are considered necessary to control off-road vehicular activities for the protection of the resources and the environment.

Section 3045.1-1(a) (Now 3209.1-1(a))

Comment Bureau of Land Management, (28); Chevron Oil Company, (36).

This section has been amended to read "authorized officer" of the Bureau of Land Management instead of District Manager. However, § 3045.2 and § 3045.3 were not changed accordingly. Why the inconsistency?

Response

Action taken on the comment. The regulations have been revised to read "authorized officer."

Section 3045.1-1(a) (Now 3209.1-1(a))

Comment Rocky Mountain Oil & Gas Asso., (35); Chevron Oil Company, (36), (42); American Petroleum Institute, (38); Standard Oil Company (Indiana), (39); Standard Oil Company (California), (40), (44); Mobil Oil Corporation, (45).

Under this section, as modified, in addition to filing the required "Notice of Intent," the prospective geophysical explorer must also receive "prior approval" before entering upon the public lands to conduct the intended exploration activities. Approval prior to entry is not required by the existing regulations. It is recommended that the requirement of prior approval before entry on public lands for geophysical exploration operations be deleted from the revised proposed regulations.

Response

No action taken on the comment. The regulation, as drafted, is considered necessary to provide for (1) proper management of the resources, and (2) adequate protection of the environment and reclamation of any damage caused by exploration operations.

Section 3045.1-1(b) (Now 3209.1-1(b))

Comment Western Oil & Gas Association, (16); American Petroleum Institute, (38); Union Oil Company (California), (43).

This provision requires the names and addresses of both the person, association or corporation for whom the exploration operations are being conducted as well as the person who will be in charge of the actual exploration activities. The name and address of the contractor should be sufficient.

Response

No action taken on the comment. This information is needed to assure full compliance with the terms and conditions of the "Notice":

Section 3045.1-1(b)(1) (Now 3209.1-1(b)(1))

Comment Southern California Edison Company, (29).

In order to keep a potential lessee's area of interest confidential, it is recommended that the authorized officer maintain the Notices of Intent in a confidential status for at least (five) 5 years.

Response

No action taken on this comment. Information submitted with "Notice of Intent" does not meet the confidential criteria of the Freedom of Information Act.

Section 3200.0-5(g)

Comment Western Oil & Gas Association, (16); Getty Oil Company, (21); Union Oil Company, (43).

This definition should be enlarged to include a provision for plant sites.

Response

No action taken on comment. The plant site will be authorized under a separate permit subject to the jurisdiction of the appropriate land management agency.

Section 3200.0-5(h) and (i)

Comment Chevron Oil Company, (36), (42); Standard Oil Company (Indiana), (39).

This regulation defines a "Geothermal resource province" and a "Potential geothermal resource." Neither of these has any foundation in the statute; hence, their creation appears to be contrary to the intent of Congress. These definitions should be eliminated.

Response

Action taken on the comment. The regulations no longer contain the "Potential geothermal resource area" definition; they retain the "geothermal resource province" definition and expand the "KGRA" definition to include a partial list of geologic and technical evidence to be considered in determining whether an area should be classified as a "KGRA" as well as definitions for the terms "nearby," "discovery," and "competitive interest."

Section 3200.0-5(j)

Comment State of Oregon, (12); Ballard-Davis Associates, (2); Edward B. Towne, (8); George D. Rowan, (9); American Thermal Resources, Inc., (13); Western Oil & Gas Association, (16); Anschutz Corp., (17); State of California, (22); Getty Oil Company, (21), (33); Magma Power Company, (23); Southern California Edison Company, (29); Western Geothermal, Inc., (34); Chevron Oil Company, (36), (42); State of Colorado, (37); American Petroleum Institute, (38); Standard Oil Company (California), (41); Union Oil Company, (43); Bureau of Land Management, (46).

The classification of KGRA should be limited to those areas presently defined, and any new areas coming under this classification should be limited to areas that are known to contain geothermal fluids or rocks at temperatures and depths sufficient for commercial exploitation. Also the existence of multiple filings for the same land does not, standing alone, necessarily indicate a competitive interest requiring competitive leasing.

Response

Action taken on the comment. The statute requires that the definition and establishment of a KGRA will be based on criteria other than "known to contain fluids or rocks at temperatures and depths sufficient for commercial exploitation." The statute also directs that a KGRA can be established on the basis of nearby discoveries, competitive interest, and other indicia. The regulations are amended to set forth a partial list of geologic and technical criteria to be considered in establishing a "KGRA" and to include definitions for the terms "nearby," "discovery," and "competitive interest" as used in the Act.

Section 3200.0-5(j)

Comment Bureau of Land Management, (46).

The proposed regulations set forth the criteria for determination of a KGRA. The regulations are silent as to which agency (BLM or Geological Survey) will determine the boundaries of potential geothermal resource areas and potential geothermal resource provinces. The regulations should be more specific in establishing these responsibilities.

Response

No action taken on comment. The Director of the Geological Survey has the responsibility for identifying public lands underlain by or having reasonable expectation of continuing geothermal steam and associated geothermal resources that meet or exceed the minimum limits set by the classification standards.

Section 3200.0-6(a)

Comment George D. Rowan, (9).

These pre-leasing regulations will inadvertently have the effect of slowing down and possibly causing interminable delays for the private sector operator in the exploration for and discovery of new geothermal steam fields in the western states.

Response

No action taken on the comment. The regulation, as drafted, is considered necessary to comply with the provisions of Sec. 24 of the Geothermal Steam Act, as well as the provisions of the National Environmental Policy Act of 1969.

Section 3200.0-6(a)

Comment Representative Robert L. Leggett, (6).

This regulation seems to be seriously deficient in its consideration of the possible environmental effects of geothermal development. There is no reason why the Department of the Interior should not, as a matter of policy, consider possible environmental damage before leasing lands for geothermal development.

Response

Action taken on the comment. The regulations, as amended, require full evaluation of the potential effect of the leasing program on the total environment, including, if needed, the preparation of an environmental impact statement, prior to the final selection of tracts for leasing.

Section 3200.0-6(a)

Comment Southern California Edison Co., (29).

The regulations should provide that when an area is eventually put up for geothermal leasing, bids be received as promptly as possible thereafter and leases provisionally issued to the successful bidder before environmental conditions described under this section are fulfilled. If, after the environmental studies have been made, the lessee is unable to conform to the stipulations, he may within 30 days withdraw his application and receive a refund of the monies paid for the lease.

Response

No action taken on comment. It is believed that a full evaluation of the potential effect of leasing should be determined prior to leasing. Prospective lessees must be fully informed of all lease terms and conditions, if possible, prior to entering into any such contract.

Section 3200.0-6(b)

Comment Western Oil & Gas Association, (16); Getty Oil Company, (21).

This regulation provides for an extensive environmental evaluation. A time constraint for its completion is essential. The review procedure should be completed with a 90 or 120-day period.

Response

No action taken on comment. Flexibility of action is required due to diverse conditions encountered in the management of the public lands subject to potential leasing. Adequate time must be allowed for making the necessary evaluations.

Section 3200.0-6(b)

Comment State of Nevada, (32).

The regulations should require compliance with State water laws. This includes licensing of well drillers, complying with well drilling rules and regulations, and meeting statutory requirements in obtaining permits to appropriate surface water and ground water.

Response

The regulations provide that the Director may consult with State agencies regarding leasing of public lands and their resources. Procedures implementing these regulations will require State agency participation in the decision-making process, where appropriate. Section 3204.1(c)(2) provides that the lessee shall conduct least operations and maintenance in a manner consistent with Federal and State water quality standards.

Section 3200.0-6(b)

Comment Union Oil Company, (43).

The Director, when he evaluates the potential effect of the leasing program, should also consider the benefits to be derived from the development of the geothermal resource such as the impact on local employment, the tax base, the need for relatively pollution-free energy, the utilization of geothermal energy as opposed to other fuels utilizable for other purposes, the national balance of payments, etc.

Response

No action taken on this comment. The factors cited are not appropriate for inclusion in the regulations. However, they are significant in the overall land use and resource development decision processes. Considerable

discussion of such factors has been included throughout the final environmental impact statement. The Department of the Interior currently is developing an energy allocation model which includes socioeconomic factors for use in the lease management decision process.

Section 3200.0-6(b)

Comment Representative Bell, (3), (5); Phillips Petroleum Company, (19); Representative Mayne, (31); Chevron Oil Company, (36); Standard Oil Company (California), (44).

This provision will give the Director of the Bureau of Land Management the option to follow or not to follow, prior to leasing, departmental procedures for determining the environmental impact of such proposed leasing. This evaluation should be done prior to leasing so that the prospective lessees will know prior to the time they acquire geothermal leases what additional restrictions or requirements will be imposed to protect the environment.

Response

Action taken on comment. The regulation is amended to delete a permissive action. They now require the Director to make a full evaluation and development of lease terms and conditions prior to leasing.

Section 3200.0-8(a)

Comment Western Oil and Gas Association, (16); Phillips Petroleum Company, (19); Getty Oil Company, (21); State of California, (22); Southern California Edison Company, (29); Chevron Oil Company, (36); Union Oil Company, (43); Standard Oil Company (California), (44).

A lease for development of geothermal resources should carry with it the right to construct all needed facilities. The regulations do not provide for this. The lessee should have a guarantee that he will be able to construct generation facilities.

Response

No action taken on comment. The regulations now provide that a lessee is entitled to use so much of the leased lands, or may apply for right to use so much of other Federal lands, as may be deemed necessary for the production, utilization, and conservation of geothermal resources. In either case, such use will be authorized only under a separate permit. Section 3200.0-6 requires that, when an area is initially considered for geothermal leasing, the authorized officer will consider the potential effect of geothermal resources operations upon the resources of the area and its total environment. He shall develop special terms and conditions to be included in leases when they are needed to permit use of the land for generating and transmission facilities where the location of such facilities is identified prior to leasing.

Section 3200.0-8(a)

Comment Bureau of Land Management, (28).

First and second sentences used "deemed necessary," but does not specify who designates the use area.

Response

No action taken on comment. The authorized officer of the surface managing agency will determine what is "necessary."

Section 3201.1-6(b)

Comment Pacific Energy Corporation, (3); Anschutz Corporation, (17); Burlington Northern, (20); Union Oil Company, (43).

"Excepted Areas" should be leasable with restrictions. The Act provides that National Recreation Areas are excluded from leasing. This should be construed to apply only to National Recreation Areas existing at the time of enactment of the Act. The Secretary should have flexibility to lease Federal lands other than lands in National Parks.

Response

No action taken on comment. The Act specifically excludes the lands identified in the regulation. The Secretary has no authority to modify these exclusions. The National Recreation Area exclusion has been interpreted to include both existing areas and areas that may be established in the future.

Section 3201.2(a)

Comment Pacific Energy Corporation, (3); State of Oregon, (12); State of Colorado, (37).

This acreage restriction per State is unreasonable. A more reasonable figure than thirty-two sections would be approximately fifty sections per company allowed per State. Suggest that the emphasis be shifted from strict regulation of acreage per State to some overall national maximum so that the State figure would be adjusted perhaps so that in any one State approximately 64,000 acres would be allowed per company but that the sum national total could not exceed 640,000 acres. It is important that the allowable area held by any one geothermal developer be increased substantially.

Response

No action taken on comment. The regulation paraphrases the Act as to acreage limitation per State.

Section 3201.2(a)

Comment Phillips Petroleum Company, (19).

The term "governmental units" is excluded from 3201.2(a). If "governmental units" are entitled to hold leases, they should be subject to the same acreage limitation as imposed on others.

Response

Action taken on comment. The regulation has been modified by deleting "municipality" and inserting in lieu thereof the term "governmental unit."

Section 3201.2(a)

Comment Southern California Edison Co., (29).

Some period of time (and we suggest 15 days) should be allowed before leases filed for become chargeable. This will permit the applicant the opportunity to adjust his land holdings.

Response

No action taken on comment. Authority not provided by the Act. Acreage in simultaneous filings charged only after successful drawee has been determined at which time the acreage immediately becomes accountable.

Section 3201.1-2(b)

Comment Southern California Edison Co., (29).

The comments which we submitted September 17, 1971, attached hereto, are still considered valid. The regulations as now published still do not prescribe for the issuance of any terms and conditions necessary

to protect the withdrawn lands, but instead, still provide for a unilateral act completely withdrawing the lands. This was not, in our opinion, the intent of the Geothermal Act, since it did contemplate the multiple use of land as provided for in Section 1016.

Response

No action taken on comment. The regulations as proposed retain the Secretary's discretion to withhold certain land from Geothermal Resources Leasing, provided he determines that such leasing would interfere with identified needs or functions. This discretion is needed whereby the Secretary can fulfill his obligation of proper multiple land use management. Section 3230.1-1 protects the lessees, permittees or claimants preference rights.

Section 3201.2(b)

Comment Anschutz Corporation, (17).

"Parties owning a royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with a similar percentage of the total lease acreage."

This results in a chargeability in excess of 100% per acre. If chargeability is to be based on production rather than working interest, then the working interest should be charged only with its net revenue interest. The basic royalty and subsequent overriding royalties should be deducted from the chargeability of the working interest owner.

Response

No action taken on comment. The regulation is considered necessary to assure compliance with Section 7 of the Act which states: "No person, association, or corporation, except as otherwise provided in this Act (Section 18 of the Act) shall take, hold, own, or control at one time, any direct or indirect interest in Federal geothermal leases"

Section 3201.2(b)

Comment Bureau of Land Management, (28).

Stock ownership percentage is 20% when other leasing regulations provide for showing when ownership percentage is more than 10%. Why the inconsistency?

Response

No action taken on comment. The regulation, as drafted, provides a less complex approach to the stock ownership question. The 20 per centum factor is considered adequate to protect the public interest.

Section 3201.2(c) (Now designated as 3201.2(b)(2))

Comment George D. Rowan, (9); Western Oil and Gas Association, (16); Getty Oil Company, (21); Magma Power Company, (23); Southern California Edison Company, (29).

The last sentence of subparagraph (c) should be eliminated.

Response

Action taken on comment. The last sentence was modified as follows: "The same lessees holding acreage in common shall be considered a single entity and cannot hold acreage in excess of the maximum specified in the law for any one lessee."

Section 3201.2

Comment Western Oil and Gas Association, (16); Phillips Petroleum Company, (19).

This regulation should be clarified to spell out whether applications and nominations are counted in determining chargeable acreage.

Response

Action taken to clarify acreage chargeability as to applications, simultaneous filings, and nominations.

Section 3201.2(c)

Comment Union Oil Company, (43).

We suggest adding a provision to this section as follows:

"All productive leases or leases operated under approved operating, drilling or development contracts or a combination for joint operation and interest thereunder, or all leases committed to any unit or cooperative plan approved or prescribed by the Supervisor shall be excepted in determining holdings or control for purposes of acreage chargeability."

Response

No action taken on comment. The Act does not provide that productive leases, which are not included in approved operating, drilling or development contracts, or in approved unit or cooperative plans, can be excepted in determining holdings or control for purposes of acreage chargeability. The other situations cited are excepted by the Act and the regulations so provide in Sections 3243.2 and 3243.3.

Section 3202.2-3

Comment Bureau of Land Management, (46).

The regulation is not complete in that it does not specify what is required of the attorney-in-fact nor the power of attorney granting his authority. We suggest this regulation be revised and expanded similar to 43 CFR 3102.6-1.

Response

No action taken on comment. The regulation is considered adequate as proposed.

Section 3202.2-1(a)

Comment Western Oil and Gas Association, (16); Getty Oil Company, (21); Magma Power Company, (23); Chevron Oil Company, (43).

The regulation should be amended to permit the filing of simultaneous applications in excess of the allowable acreage limitation. A lessee should be given 30 days after the lease awards to withdraw applications which caused him to exceed the quota.

Response

Action taken on comment. The regulation, as drafted, is necessary to comply with the acreage limitations imposed by Section 7 of the Act. Applications filed under Subpart 3211 of these regulations are not considered chargeable acreage until the successful drawee has been determined, at which time the successful drawee assumes the chargeability, except where only one application is received on a leasing unit during the simultaneous application period as provided in a notice, in which case the acreage is chargeable immediately upon termination of the prescribed filing period. Likewise, applications filed during 30-day simultaneous filing periods under 3210 are not charged until priority is determined. (See Section 3201.2(a).)

Section 3202.2-4

Comment Phillips Petroleum Company, (19).

This regulation should also permit reference to evidence previously filed. To clarify Section 3202.2-4, the words "or evidence" should be inserted after the word "statements" in the first line of Section 3202.2-4.

Response

Action taken on comment. Regulation has been modified by deleting "evidence" in Section 3202.2-3 and the title for Section 3202.2-4 and inserting in lieu thereof the word "statement."

Section 3203.1-2

Comment State of Nevada, (32).

The long terms of the proposed leases would allow a lessee to gain complete use of a geothermal resource for many years by only producing a small amount of steam. At the same time, he could be wasting or not using other valuable resources such as heat, hot water or brine, and minerals. The reorientation of these regulations toward multiple purpose development is essential for the best utilization of a limited resource.

Response

No action taken on comment. The term of a geothermal lease is established by the provisions of the Act. These regulations, as drafted, provide for diligent development and production or utilization of geothermal steam in commercial quantities before the lessee can take advantage of an extended term. The regulations are considered adequate to achieve the purposes of the Act and multiple use and production of the resources.

Section 3203.1-3

Comment Northwest Public Power Association, (30).

The public must have the right to recapture its geothermal resources for geothermal purposes as well as for other purposes, and private preference is questionable public policy. The private preference granted by this section, which governs renewal of geothermal resources leases on public lands, is protested.

Response

No action taken on the comment. The regulation, as drafted, recites the provisions of the Geothermal Steam Act. Amending legislation required to accommodate the comment.

Section 3203.1-3 and 3203.1-4

Comment American Thermal Resources, Inc., (13).

These sections provide that only if geothermal steam is produced in commercial quantities will the lease be qualified to be held by production. Since it is possible that commercial quantities of hot water or hot brine could be produced and utilized for generation of electricity by use of a binary fluid heat exchange process, we believe these sections should be enlarged to provide for commercial quantities of all geothermal resources which can be commercially utilized.

Response

No action taken on the comment. The regulation, as drafted, is required by the provisions of the Geothermal Steam Act. It appears to accommodate the suggestion for generation of electric power. If the suggestion is not speaking to generation of electric power, then amendatory legislation would be required to accommodate the comment.

Section 3203.1-3(b)

Comment Chevron Oil Company, (36).

In Section 3203.1-3(b), it is provided, "For the purposes of paragraph (a) of this section (emphasis added) production or utilization --- in commercial quantities shall be deemed to include _____. " Should not this same definition of commercial quantities apply in Section 3205.3 (see comment below re number) and Section 3205.3-5, in which event "paragraph (a) of this section" should be deleted and "this Part 3200" substituted therefor?

Response

Action taken on comment. The regulation has been revised to eliminate the objectionable phrase. Commercial quantities has been defined in §3000.0-5(j).

Section 3203.1-4(a)

Comment State of Colorado, (37).

The regulation provides that if an extended lease is incapable of producing any more steam the lease may be further extended if byproducts are being produced for no more than 5 years. Why the 5-year limit? This doesn't seem reasonable. Should be as long as commercial quantities of byproducts are being produced.

Response

No action taken on the comment. This regulation is required by statute. Amending legislation needed to accommodate the comment.

Section 3203.1-4(d)

Comment Magma Power Company, (23); Solicitor's Office, (49).

The paragraph at the end of this section should be called "(e)" so that it clearly refers to subdivisions (b) and (c) of this section. Otherwise, since it is not separately numbered, there might be some question as to whether or not the last paragraph refers only to subdivision (d).

Response

Action taken on the comment. The last paragraph of the section has been designated subparagraph (e).

Section 3203.1-5(a) (Now 3203.1-6(a))

Comment Chevron Oil Company, (36).

The regulation should be amended to define "primarily valuable" (lines 8 and 9). We recommend the term be defined to the effect that the leasehold is primarily valuable for the production of byproducts when one or more geothermal resources is no longer producible in commercial quantities. Such a definition would seem to do no violation to the intent of the Act.

Response

Action taken on the comment. Section 3200.0-5(1) has been added to define "primarily valuable."

Section 3203.1-5(b) (Now 3203.1-6(b))

Comment Union Oil Company, (43).

This section should be clarified relating to (1) prior locations under the Act of 1872 (2) the lessee must have the right to produce and sell any locatable mineral, produced incidental to geothermal operations (3) in the event a location has not been filed prior to the issuance of a geothermal lease, the lessee should have a preemptive right to locate as against third parties during the term of the lease.

Response

No action taken on comment. (1) Prior rights of lessees, permittees, applicants, or claimants as to the production or use of byproducts are protected by existing law; (2) byproducts that do not meet the definition established by Section 3000.0-5(c) are subject to lease or location by the first qualified applicant or locator in accordance with applicable law; (3) the public land laws do not provide for such preferential treatment, except, the Geothermal Steam Act provides a preferential period of 90 days in which a geothermal resources lessee must convert his terminated resources lease to a mining claim location or mineral lease.

Section 3203.1-5(b) (Now Section 3203.1-6(b))

Comment American Metal Climax, Inc., (15).

The proposed rules do not assure that the rights set forth in 30 U.S.C.A., Section 525, will be preserved in the regulations. For example, pursuant to Section 3203.1-5(b) a lessee under a geothermal lease may later locate under the mining laws and thereby convert a geothermal lease to a mining claim. The provisions of 30 U.S.C.A., Section 525, would indicate that the intervening mining claim locator should have preference over the geothermal lessee. The geothermal leases and unit operations pursuant to Part 271 contemplate that wide areas of land will be involved. For this reason, it is important that the rights of a mining claim locator be recognized as superior to those of a geothermal lessee.

Response

No action taken on the comment. Leasable or locatable minerals meeting the criteria of a "byproduct" under the Geothermal Steam Act are not subject to leasing or location under applicable law. Existing mining claims in conflict with proposed geothermal resources leasing areas will be recognized, where known, and considered under the provisions of the Multiple Mineral Development Act, P.L. 585 prior to leasing. The provisions of this Act are available to both the lessee and mining claimant. "Byproduct" production of a locatable mineral is protected by the provisions of the Geothermal Steam Act for 90 days after termination of production of Geothermal Steam and Associated geothermal resources. The regulations are considered adequate.

Section 3203.1-5(c) (Now Section 3203.1-6(c))

Comment Alex M. Gray, (26).

This provides for regulations which the Department of the Interior Secretary might issue as provided for by 41 Statute 449; 30 U.S.C. 186 and 47 Statute 1570; U.S.C. 30 124. There is no mention of possible conflicting of interest between governmental departments and Federal agencies. There is also, to my knowledge, no provision for public interest group intervention. I would hope that a specific section would be included to provide for governmental conflict or public interest concern.

Response

No action taken on the comment. Regulation 43 CFR 1852.1-2 provides: "Where the elements of a contest are not present, any objection raised by any person to any action proposed to be taken in any proceeding before the Bureau will be deemed to be a protest and such action thereon will be taken as is deemed to be appropriate in the circumstances." Therefore, any person aggrieved by any Bureau action or proposed action can protest such action.

Section 3203.1-5(c) (Now 3203.1-6(c))

Comment Anschutz Corp., (17).

This section needs added protection similar to Paragraph 3201.1-2 subparagraph (b), i.e., "Should the head of the agency object to the leasing of such withdrawn lands, the lands shall not be leased unless the Assistant Secretary for Public Land Management approves the offering after consultation with the appropriate Assistant Secretary or his representative."

Response

No action taken on the comment. The regulation is considered adequate. The comment is a subject to be considered in internal manual procedures.

Section 3203.2

Comment Chevron Oil Company, (36).

This regulation should be amended to expressly permit leases to be issued for less than 1,280 acres for isolated tracts.

Response

Action taken on the comment. The regulation, as redrafted, provides that no lease will be issued for less than 640 acres, except at the discretion of the Secretary, or where a departure is occasioned by an irregular subdivision. The provision for leasing less than a 640-acre tract at the discretion of the Secretary is considered adequate provision for leasing of isolated tracts embracing less than 640 acres.

Section 3203.2

Comment Gulf Oil Company, (18); Southern California Edison Company, (29).

The regulations as proposed provide that no lease will be issued for less than 1280 acres, except at the discretion of the Secretary. Since a lessee is limited to holding a total of only 20,480 acres per State, it is recommended that the lease issuance limitation be reduced to 640 acres to provide for more workable projects. Such a limitation would be compatible with the Mineral Leasing Act.

Response

Action taken on the comment. Minimum acreage per lease has been reduced to 640 acres.

Section 3203.3

Comment Bureau of Land Management, (28).

Section 3203.3 - Last sentence is incomplete.

Response

Action taken on the comment. The typographical error has been corrected.

Section 3203.5

Comment Ellis T. Hammett, (27).

The United States Department of the Interior, through the Bureau of Land Management and Geological Survey, should have the authority to determine what, how, when, where and why these natural resources should be conserved, explored, developed, produced, processed, and marketed. A public advisory group should be selected to help determine these policies. This should prevent the assemblage of large blocks of government land to hold the enclosed resources until a future market makes the resource more valuable, as is now allowed by the U. S. Department of the Interior rules and regulations.

It is recommended that a minimum exploration and/or development cost be required on an annual basis, possibly 10 percent of the total annual rental charge would be proper. All information obtained, such as logs, surveys, drilling data and core information, should be open to the public. All U. S. governmental leases should require full disclosure of any and all information.

Response

No action taken on the comment. The regulations, as drafted, provide for full participation of all interested parties without the need for a public advisory group. Acreage limitations - it is believed that acreage limitations, receipt of fair market value, escalating rentals, and diligent exploration requirements will prevent holding the resource for a long time without orderly and timely development. Information and reports submitted by the lessee, as required, must remain confidential so long as the lease remains in effect. This information can be utilized by the government to assist in the lease management decision making process and protect the public interest.

Section 3203.5

Comment Southern California Edison Co., (29).

It is recommended that expenditures relating to diligent exploration prior to the issuance of the lease also be credited towards the maintenance of the lease.

Response

No action taken on the comment. The regulations, as drafted, provide that any expenditure for diligent exploration operations in excess of the minimum required expenditure for that year may be claimed as a credit for certain purposes.

Section 3203.5

Comment Ellis T. Hammett, (27).

All U. S. Government leases should have a development or drilling clause which requires beginning operations within a certain time, say two years, or the lease would be automatically cancelled and the acreage revert to the U. S. to be leased by others. The non-compliant lessee should not be eligible to lease the same acreage within two years after the reversion.

Response

No action taken on the comment. The regulations, as drafted, require that each geothermal lease will include provisions for the diligent exploration of the leased resources. These provisions will be formulated prior to lease issuance, based on the prospective lessee's plan of operation submitted with his application. In any event, exploration operations, in order to qualify as diligent exploration, must begin in the 6th year of the lease. Failure to perform exploration operations could be grounds for cancellation of the lease.

Section 3203.5

Comment American Thermal Resources, Inc., (13); Anschutz Corporation, (17).

A provision that this supplied information may be kept confidential at the operator's written request is needed.

Response

No action taken on the comment. This comment is accommodated in the U.S.G.S. operating regulations (30 CFR 270.77). The management of all reports concerning lease operations is the responsibility of the Supervisor.

Section 3203.5

Comment George D. Rowan, (9); Western Oil and Gas Association, (16); Getty Oil Company, (21); Chevron Oil Company, (36); Standard Oil Company (California), (41), (44); Union Oil Company, (43).

This regulation can become extremely burdensome after the fifth year of the primary term, even to the extent of discouraging a lessee from maintaining the lease, particularly if the annual rental for the first five years exceeds the \$1.00 per acre minimum provided by proposed Section 3205.3-1. The fourth sentence of this section should be amended by the insertion of the phrase "unless waived or modified by the Supervisor for good cause" immediately following the words "Moreover, after the fifth year of the primary lease term"

Response

No action taken on the comment. The regulations, as drafted, are considered necessary to encourage orderly and timely development of a leasehold.

Section 3204.1(c)

Comment Center for Law and Social Policy, (11); Sierra Club, (25); Alex M. Gray, (26); Bureau of Land Management, (28); Chevron Oil Company, (36); Standard Oil Company (Indiana), (39); Standard Oil Company (California), (41).

The generalized provisions in the proposed regulations relating to the identification of environmental problems, development and implementation of environmental safeguards, and the vague "public interest" standard for excepting lands from leasing raises serious doubts concerning their adequacy regarding protection of environmental quality and the public interest.

The regulation should stipulate that operations on Federal lands conform to local (county or other administrative subdivision) standards of environmental protection as well as State and Federal standards.

One final environmental regulation has, unfortunately, been left out. That is the use and possibility of using nuclear technology or explosions.

The wording appears to be unclear or ambiguous as to the responsibility for environmental compliance. As an example, the opening paragraph splits the responsibility assuring compliance with terms and conditions between the Supervisor as to the lands in the area of operation and the appropriate land management agency as to the remaining lands in the lease; however, subpart 3204.1(c)(4) says, "The lessee shall employ such soil and resource conservation and protection measures on the leased lands as the supervisor deems necessary." The whole section is rather loosely worded.

The Supervisor's discretion to impose additional and more stringent standards than Federal and State pollution abatement standards should be expressly limited to unusual and unique situations which reasonably demand such additional and more stringent standards.

Response

No action taken on the comments. The regulations, as drafted, provide for a complete review of the impact on the environment expected to be caused by a geothermal leasing program, especially the plan of operation proposed by a prospective lessee. Lease terms and conditions will be developed, in coordination with all interested parties and after consultation with State and local agencies prior to leasing. The terms and conditions could be more strict than State and local requirements in certain leasing situations. The Supervisor is the designated official responsible for official contact with the lessee. Assuring compliance with surface and nonrenewable resource protection requirements is the responsibility of the land management agency acting through the Supervisor.

Any proposal for use of nuclear explosives for development of geothermal resources would have to be under permit of the Atomic Energy Commission, and the potential impacts of such an action would have to be covered by an environmental impact statement. The Department could allow the use of such devices on Federal leases within the discretionary authority of Subpart 3200 of the leasing regulations. No proposal for use of nuclear devices is being considered. No detailed studies of the feasibility of nuclear fracturing in connection with geothermal development have been made. The AEC is not currently studying the possible use of nuclear explosives for geothermal development and no funds are authorized for such studies. Unless and until scientific studies show that nuclear fracturing might be technically and economically feasible, and procedures for nuclear stimulation were developed, the potential environmental impact could not be effectively appraised or provided for. Discussion of the potential environmental effects of nuclear explosives for natural gas stimulation has been included in the alternatives section of the final environmental impact statement (Volume I, Chapter IV-D).

Section 3204.1(c)(2)

Comment Southern California Edison Company, (29); State of Colorado, (37); Standard Oil Company (California), (44).

Before any water is allowed to be reinjected into any aquifers, State officials MUST be consulted. These are the State's waters and, therefore, the State should and must have the final say on reinjection. The lessee should have the right to reinject any unused portion of the geothermal effluent, including natural toxic materials, into any formation that does not contain potable water.

Response

No action taken on the comment. The regulation, as drafted, is considered adequate to accommodate the comment.

Section 3204.1(c)(5)

Comment Union Oil Company, (43).

Specific standards should be set for noise control as they have for air quality.

Response

No action taken on the comment. The regulations, as drafted, are considered adequate for development of geothermal resources leasing and operating order terms and conditions and for providing for the necessary monitoring and control of all forms of pollution.

Section 3204.1(e)

Comment Chevron Oil Company, (36).

Section 3204.1(e) should be amended by inserting "reasonable" after "take" in line 2, and by substituting "such land subsidence or seismic activity" for "such activity" in lines 6 and 7.

Response

No action taken on the comment. The regulation, as drafted, is considered adequate. The reasonableness standard would give lessee no real additional protection.

Section 3204.1(d)

Comment Magma Power Company, (23); Union Oil Company, (43);
Solicitor's Office, (49).

Although the lessee is obligated to monitor operations for seismic activity, this is a harsh and unrealistic requirement since the average lessee will not have the equipment to monitor such operations and such monitoring is properly within the province of the Geological Survey. Suggest, therefore, that the reference to monitoring operations for seismic activity be eliminated.

Response

No action taken on the comment. The regulation, as drafted, is considered a necessary and realistic requirement. Data obtained will assist materially in the protection of the environment.

Section 3204.1(d)

Comment Union Oil Company, (43).

This provision should be modified by deleting, commencing on the fourth line, "in a manner acceptable to the Supervisor," and insert "so that the lease premises are maintained in a clean and sanitary condition." The provision, as it is now written, places an unusual and subjective burden on the Supervisor.

Response

No action taken on the comment. The regulation, as drafted, is considered adequate. A determination would still have to be made as to whether the premises were being maintained in a clean and sanitary condition. A properly prepared plan of operation, submitted for approval prior to entering the lands, should specify the terms needed for maintaining a clean and sanitary leasehold.

Section 3204.1(g)

Comment Chevron Oil Company, (36).

Section 3204.1(g) should be amended by inserting "reasonable" after "deemed" in line 2, and Section 3204.1(i) by adding "reasonable" after "the" in line 2.

Response

No action taken on the comment. The reasonableness standard would give lessee no real additional protection.

Section 3204.3

Comment Chevron Oil Company, (36); Standard Oil Company (California), (41).

This section not only limits the arbitration period for the readjustment of lease terms to the bare minimum of sixty days authorized by the Act, but also fails to give any assurance that the authorized officer will be required to respond to a timely-filed protest against the readjustment of terms. We are certain that is not the intent, but theoretically a lessee could timely file a protest and the authorized officer, for reasons other than deliberate negligence, fail to respond to the protest within the 60-day period. We suggest, therefore, that the last sentence of the proposed subsection 3204.3(a)(2) be amended by the deletion of the phrase "the lease may be terminated by either party" and the substitution therefor of the following: ". . . either party may serve notice upon the other that in the absence of an agreement within thirty days from receipt of notice the lease will be terminated."

Response

Partial action on the comment. The regulation has been modified to specifically state that any termination notice is subject to appeal by any person adversely affected and to establish the effective date of the readjusted terms.

Section 3204.3

Comment Pacific Gas and Electric Company, (24).

The readjustment of "the terms of any geothermal lease" at not less than 10-year intervals, as determined by the authorized officer, is not consistent with power plant investment and long-range planning necessary for gradual, orderly field development. Pacific Gas and Electric Company, while not opposing Section 3203.1-2 (primary leasing term) and Section 3203.1-3 (additional term), recommends that the 10-year lease readjustment provision of Section 3204.3 be deleted.

Response

No action taken on the comment. The regulations paraphrase the law which establishes the readjustment interval at not less than 10 years, beginning 10 years after the date geothermal steam is produced.

Section 3204.3

Comment Bureau of Land Management, (28).

There is no mention of environmental reporting in either of these subsections. It seems reasonable that new terms and conditions or a new lease should be based in part on environmental analysis originally executed pursuant to Section 3200.0-6, preleasing procedures.

Response

No action taken on the comment. The regulation, as drafted, is considered adequate to provide a complete review of all lease terms and conditions, conditions prevailing at the time of readjustment, and all pertinent data available at such time.

Section 3204.6

Comment Gulf Oil Company, (18).

This subsection should be deleted in its entirety. The reason for this is that Section 14 of the Act states that a lessee, subject to the other provisions of this Act, is entitled to use so much of the surface of the land as may be found by the Secretary to be necessary for the production, utilization and conservation of geothermal resources and, by Section 3204.3, the surface of the land is protected, whoever may be the owner. We feel that, since the terms and conditions of a lease when originally let need not be brought to the attention of the surface owner of such patented lands, the provision for notification of subsequent changes merely enhances the opportunity for frustration of the basic purpose of the lease. In connection with this point, there is, of course, an underlying assumption that nothing would be readjusted which would go beyond the government's reserved rights in using its reservation of geothermal resources, nor which would, contrary to the mandate of the Act, interfere with the protection of the surface of the land.

Response

No action taken on comment. Regulations provide for two different circumstances and are considered necessary and adequate. The regulations call for notification only and it is difficult to see how the extension of this courtesy can frustrate the geothermal steam leasing program.

Section 3205.2(b)

Comment Anschutz Corporation, (17).

The increase of service fees from \$10 to \$50 is inflationary and an undue burden on the small operators.

Response

No action taken on the comment. The regulation, as drafted, is consistent with the provisions of Title V of the Independent Offices Appropriation Act of 1952 (31 U.S.C. 483a). This Act prescribes that any work, services, licenses, permits, etc. furnished shall be self-sustaining to the full extent possible. The fee or charge shall be determined to be fair and equitable, taking into account the direct and indirect cost to the Government. The \$50 fee is based upon such concepts and requirements.

Section 3205.2(b)

Comment Gulf Oil Company, (18).

The word "non-refundable" should be taken out of this subparagraph or that, if left in, an exception be provided for a refund of the service charge if the application is rejected by reason of all of the leasable land becoming a Known Geothermal Resource Area after the application has been filed pursuant to Section 3210.4. In this connection, it might be appropriate to make a similar provision at the end of Section 3210.4 to the same effect.

Response

No action taken on the comment. The regulation, as drafted, is considered equitable and adequate.

Section 3205.3-1

Comment State of Oregon, (12); Anschutz Corporation, (17); Standard Oil Company (California), (44).

This regulation deals with rental to be paid under a geothermal lease. In this case, the words "not less than" have been inserted prior to the words "\$1 per acre." In order to make the matter of rentals more certain, the rental should be established at \$1 per acre and the words "not less than" be deleted. The increase of rental fees from \$0.50 to \$1.00 is inflationary and an undue burden on the small operator.

Response

No action taken on the comment. The provisions of the regulation, as drafted, are consistent with the statute.

Section 3205.3-2

Comment Chevron Oil Company, (36); Standard Oil Company (California), (41), (44).

In order to make the matter of rentals more certain, the rental should be established at \$1 per acre and the words "not less than" be deleted.

Response

No action taken on the comment. The regulation, as drafted, provides flexibility for establishing advance lease rental terms. This flexibility is considered necessary and desirable to help accomplish one of the intents of the law which is to encourage orderly and timely development. It is consistent with the concepts of receiving fair market value for publicly owned resources.

Section 3205.3-2

Comment Phillips Petroleum Company, (19).

Is the amount of rental to be determined on an individual lease basis?
If so, how is it to be determined?

This section, as written, seems to imply that the amount of the rental shall be determined on an individual lease basis. The amount of rentals for noncompetitive leases should be fixed in the regulations and apply to all noncompetitive leases.

Response

No action taken on the comment. The regulation, as drafted, allows rentals to be determined on a case-by-case basis and will provide the flexibility considered necessary and desirable to permit the orderly and timely development of the resource in appropriate harmony with other land use, natural resource, and environmental values. Lease rental terms will be determined by using acceptable land and resource evaluation and appraisal techniques. Rentals must reflect fair market value which Congress has mandated must be received for alienation of any public resources.

Section 3205.3-3

Comment State of Oregon, (12); Western Oil and Gas Association, (16); Getty Oil Company, (21); Southern California Edison Company, (29); Union Oil Company, (43).

This subsection should be eliminated. This escalating rental rate requirement can only serve to discourage potential participants in geothermal exploration. Without the widest possible participation in exploration and leasing, a geothermal industry cannot hope to arise.

Response

No action taken on the comment. The regulation, as drafted, is considered necessary and desirable to help accomplish the orderly and timely development of the resource.

Section 3205.3-3

Comment Chevron Oil Company, (36); Solicitor's Office, (49).

The section number should be 3205.3-3.

Response

Action taken on the comment to correct this improper designation.

Section 3205.3-4

Comment Bureau of Land Management, (28).

Is there any requirement that applications for fractional interest must include showing as to ownership of mineral interests not owned by the United States?

Response

Action taken on comment. The regulations have been modified by adding Section 3202.2-7 to accommodate the comment.

Section 3205.3-5

Comment Southern California Edison Company, (29); Chevron Oil Company, (36).

The royalty on geothermal resources should be set at 10% and on byproducts as 5% except for byproducts named as a mineral in Section 1 of the Act of February 25, 1920. Here, too, any increase in the 10% royalty can be effected by change in regulations from time to time as appropriate.

Response

The regulations now provide that the royalty rate should be set forth in the lease at not less than 10% and not more than 15% as set forth in the Act. This provision provides flexibility to establish royalty rates commensurate with the anticipated value of the resource. Royalty rates for all leases will be made available to prospective lessees prior to lease issuance.

Section 3205.3-5

Comment Phillips Petroleum Company, (19).

Is the amount of royalty to be determined on an individual lease basis?
If so, how is it to be determined?

This section, as written, also seems to imply that the amount of royalty shall be determined on an individual lease basis. The amount of royalty for noncompetitive leases should be fixed in the regulations and apply to all noncompetitive leases.

Response

No action taken on the comment. The regulation, as drafted, allows royalty to be determined on a case-by-case basis and will provide the flexibility considered necessary and desirable to help accomplish the purpose of the regulations and the Act, which is to encourage orderly and timely development of the resource. Lease royalty terms will be determined by using acceptable mineral resource evaluation and appraisal techniques. Royalties must reflect fair market value which Congress has mandated must be received for alienation of any public resources.

Section 3205.3-5

Comment Standard Oil Company (California), (44).

This regulation contains proposed provisions with regard to royalty. In the case of a Federal oil and gas lease, no royalties are due for oil and gas produced from a lease which is unavoidably lost or which is used for production purposes on the leasehold premises. Such a provision should be added to this regulation. The words "except that no payment of a royalty will be required on geothermal resources unavoidably lost or used in preparing the geothermal resource for utilization" should be added at the end of this section.

Response

No action taken on comment. Regulations in 30 CFR 270.62 accommodate this comment.

Section 3205.3-6

Comment Southern California Edison Company, (29).

It is unclear as to whether or not water from a geothermal electric generating plant's condensers would fall within this section and thus require royalty payments thereon. It is recommended that the clause be clarified to make it clear that such royalty payments are to apply only to specially processed water and not water used in the generation of electric energy.

Response

No action taken on comment. The regulation, as drafted, provides that royalty payments are only required on commercially demineralized water that has been sold or utilized by the lessee. This provision is required to assure proper conservation or utilization of the resources.

Section 3205.3-9

Comment Chevron Oil Company, (36).

To comply with Sec. 8 (b) of the Act, the 4th sentence of 3205.3-9 should be amended to read "Unless this lessee files with the authorized officer objections to the proposed rentals and royalties or (added) relinquishes the lease within 30 days after receipt of such notice, he shall conclusively be deemed to have agreed to such terms and conditions."

We make the same recommendation for 3205.3-9 as we did for 3204.3 (a) (2), i.e., delete "the lease may be terminated by either party" commencing in line 22, and inserting "either party may serve notice upon the other that in the absence of an agreement within 30 days from receipt of such notice the lease will be terminated."

Response

Partial action taken on the comment. The regulation has been modified to: (1) specially state that any termination notice is subject to appeal by any person adversely affected; (2) establish the effective date of the readjusted terms; and, (3) require readjusted rental and royalty terms to be paid in the timely manner prescribed. These adjusted rents and royalties may be paid under protest.

Comment Alex M. Gray, (26).

This section states that there will be a thirty (30) to sixty (60) day period of (for) bargaining of new terms after a 35-year period. There is not, to my knowledge, any rule or regulation which provides for suspension of operations during negotiations. As they may be interpreted in Subpart 3245-Termination and Expiration-there are several provisions for filing statements concerning use and management of leased land and possible restoration operation after such use is completed. In (b) of 3245.1 numbers (2) and (3) it is stated:

" . . . to place all wells on the land to be relinquished in condition for suspension of operations or abandonment . . . (3) to restore the surface resources in accordance with all regulations and the terms of the lease; In my opinion, these are good terms. However, I believe that, in accordance with the aforementioned sections in 3205.3-9, it should be broadened to provide a complete suspension of operations during this period. There should be also be provisions in this section which would allow public inspection during this period. However, it should be specific enough to provide for contingent factors such as societal needs, economic considerations for the public-workers factors, ecological-environmental conditions and other miscellaneous factor.

Response

No action taken on the comment. The regulations, as modified, allow for continuous production during the negotiation period which is believed to be in the best public interest. The factors cited in the comment are all considered prior to readjusting any terms or conditions of a lease. Public participation to assist in making pre-leasing management decisions is invited. Post-leasing decisions, such as readjusted terms and conditions are considered a matter of discussion between the parties of interest to the contract.

Section 3206.6

Comment Bureau of Land Management, (28).

"Unit of coverage" is not explained.

Response

Action taken on the comment. The regulation has been modified to delete the phrase as being unnecessary.

Section 3206.8

Comment Chevron Oil Company, (36).

This regulation should be amended to read "at the time of adoption of this Subpart 3206," that "this paragraph" in the last line should be amended to read "this Subpart."

Response

Action taken on the comment. The regulation, as modified, allows an existing oil and gas nationwide or statewide bond to be made applicable to these regulations provided both the principal and the surety so agree.

Section 3206.8

Comment Bureau of Land Management, (28).

It appears that this provision need not be included. If it is included, it should be as a part of 3206.7 since it relates to operation of penalty provisions.

Response

No action taken on the comment. The regulation does not relate to penalty provisions. The purpose of the regulation is to allow existing oil and gas nationwide or statewide bonds to be made applicable to Geothermal Steam regulations.

Section 3210.1

Comment Getty Oil Company, (33).

The proposed regulation should be modified by deleting all but the first eleven lines thereof. As drafted, it would be almost impossible to have both known geothermal resources areas and noncompetitive areas which would be available for simultaneous filings.

Response

No action taken on the comment. The regulation, as drafted, is considered necessary to meet the provisions of the Act. KGRA's are not available for leasing under the simultaneous filing procedures proposed by the regulations. Noncompetitive leasing units listed in a published notice as available for leasing and calling for nominations for leasing which are included in a KGRA prior to leasing issuance cannot be leased noncompetitively but are then subject to competitive leasing. This classification procedure is used in the Oil and Gas noncompetitive leasing procedures.

Section 3210.1

Comment Bureau of Land Management, (46).

The proposed regulation is rather difficult to comprehend. It would appear that when an application includes half or more of the acreage in a previous application, priority of the application is determined by a drawing. However, the regulation does not provide for the disposition of the lands in the junior application which are not in conflict. However, it does provide for the rejection of lands in conflict when they cover less than half of the acreage in a previous application and the authorized officer may add contiguous lands equal in size to the rejected lands. We question the authorized officer's authority to add lands to an application.

Response

Action taken on the comment. The regulation as revised allows the proper adjudication and disposition of conflicting applications. To the extent possible, no application will be rejected because a part of the lands is included in a simultaneous filing which receives senior priority as a result of a drawing. However, leases cannot be issued for less than 640 acres unless the parcel applied for is isolated, and then only in the discretion of the Secretary. The regulations are modified to reduce, to the maximum extent possible, the rejections

of junior applications because of insufficient acreage. In order to reduce this possibility, and provide for proper management, it is considered necessary for the authorized officer to add adjacent unapplied for lands to the lands remaining in an application after the senior application is honored. The regulations provide for the option of the junior applicant to refuse a lease where lands are proposed to be included in a lease by the authorized officer in order to make the junior application valid with respect to the minimum-size allowable under the regulations, or for management purposes. (See §3203.2)

Section 3210.1

Comment Western Geothermal Inc., (34).

The procedure for application for non-competitive leases provides that applications to lease the same lands which are filed between the effective date of these Regulations and thirty days following that time will be considered to have been filed simultaneously. This subpart goes on to provide that the right of priority of a non-competitive geothermal lease, among those persons simultaneously filing, will be determined by a public drawing. It is suggested that further considered be given to this procedure for awarding of non-competitive leases with the objective of possibly substituting experience in the geothermal industry for a public drawing procedure.

Response

No action taken on the comment. The regulation, as drafted, is consistent with the requirements of 43 CFR 1821.2-3. which is considered an equitable and desirable procedure for determining priorities among simultaneously filed applications. A procedure, such as suggested, places too great a burden on the judgment of the authorized officers to weigh the respective experience and abilities of applicants to develop leased deposits.

Section 3210.1

Comment Chevron Oil Company, (36).

To clarify this regulation, the first two sentences should be retained and the balance deleted.

Response

Action taken on the comment. The regulation as revised allows for the orderly adjudication and equitable disposition of conflicting applications.

Section 3210.1

Comment Union Oil Company, (43); Solicitor's Office, (49).

The following provision should be included in this section:

"(d) All applications will be held confidential until leases are issued."

Response

No action taken on the comment. Information required to be submitted by these regulations does not meet the confidential criteria of the Freedom of Information Act. Applications filed during a simultaneous filing period will not be made a matter of public record until the drawing is held to determine priorities. Once the drawing is held all applications will be made a matter of public record.

Section 3210.1

Comment Baumgartner Oil Company, (7); Western Oil and Gas Association, (16); Getty Oil Company, (33).

There must either be amendment of the Act to provide across the board competitive leasing or there must be a reasonable noncompetitive leasing procedure similar to that presently in effect for oil and gas.

Response

Action taken on the comments with respect to the regulations and procedures. The regulation as revised allows for the proper adjudication and equitable disposition of conflicting applications. However, the statutory amendment would require congressional action.

Section 3210.1

Comment Getty Oil Company, (33).

It is suggested that this section be modified to provide that during the 30 day simultaneous filing period, the tracts that may be filed on are predesignated. This predesignation will eliminate the monstrous formula which presently would be applied to overlapping applications. The applicant would also know at the time of filing what lands he could anticipate acquiring. It is believed that due consideration in some form be given to the predesignation of tracts during the 30 day simultaneous filing period.

Response

Action taken on the comment. The regulation as revised allows for the proper adjudication and disposition of conflicting applications. While tracts are not predesignated, the current proposed rule making requires all available lands in a section to be filed on. (See Section 3210.2-1(c).)

Section 3210.1

Comment Christopher R. Candee, (10); Magma Power Company, (23).

It appears as the rule is proposed, that if several people apply for the same acreage within the 30 day period after the first filing, then the acreage could be classed as a KGRA and thrown open to sealed competitive bidding.

Response

Partial action taken on the comment. The regulation, as drafted, provides that applications or nominations filed during the 30 day simultaneous filing period or during any future designated filing period are subject to the classification criteria established in Sec 3200.0-5(j)(3) of those regulations and will be considered as all filed the same day.

Section 3210.1(c)

Comment American Thermal Resources, Inc., (13).

The portion of this section giving an authorized officer the right to add lands to an application because of deletions of lands covered by a prior application should not be allowed unless the applicant agrees with the addition of such lands.

Response

Action taken on the comment. The regulations as revised allow for a more orderly method of filing for leasing units, and provide for the option of the applicant to refuse a lease where lands are proposed to be included in a lease by the authorized officer in order to make the application valid with respect to the minimum size lease allowable under the regulations, or for management purposes.

Section 3210.2-1(d)

Comment American Thermal Resources, Inc., (13);
Western Oil and Gas Association, (16); Getty Oil Company, (21);
Magma Power Company, (23); Southern California Edison Company, (29);
Chevron Oil Company, (36); Union Oil Company, (43); Standard Oil
Company (California), (44); Petro-Lewis Corporation, (47).

An applicant should not be required to submit a detailed plan, and narrative statement until he is ready to propose a drilling program, and at that time, then can submit his commercial development proposal. Much of the information asked for is not readily available until exploration has been completed and an understanding of the potential geothermal resource has been evaluated. Our comments made with respect to the Section 3211.2(D) of the proposed regulations filed September 17, 1971 are still considered pertinent.

Response

No action taken on the comment. The regulation, as drafted, is considered desirable to allow multiple use land management decisions to be formulated as early as possible as well as timely adequate lease terms and conditions for the conservation, protection, and reclamation of the environment and the resources. The proposed well location is not considered an onerous requirement at the time the application is made since a lease applicant has some idea of proposed well location when he decides what land to include in his application. Plans would be subject to revision as appropriate to reflect needed changes for drilling operations.

Section 3210.2-1(d)

Comment Western Oil and Gas Association, (16).

The reference to "diligent exploration" should be deleted to conform this provision with the comment on section 3203.5.

Response

No action taken on the comment. The regulation, as drafted, is considered necessary to achieve an orderly and timely development program.

Section 3210.2-1(e)

Comment Western Oil and Gas Association, (16); Magma Power Company, (23);
Union Oil Company, (43).

The words "or applications" should be deleted on the grounds that applications should be exempt from chargeability.

Response

No action taken on the comment. The regulation, as drafted, is considered necessary to conform the regulation to the intent of the acreage limitation provision of the Act. The regulations, as drafted, provide that simultaneous filed applications are not chargeable until the successful drawee has been determined, or priority is determined, at which time the acreage becomes chargeable.

Section 3210.3

Comment Western Geothermal, Inc., (34).

The procedure for application for non-competitive leases provides that applications to lease the same lands which are filed between the effective date of these Regulations and thirty days following that time will be considered to have been filed simultaneously. This Subpart goes on to provide that priority to a non-competitive geothermal lease, among those persons simultaneously filing, will be determined by a public drawing. It is suggested that further consideration be given to this procedure for awarding of non-competitive leases with the objective of possibly substituting experience in the geothermal industry for a public drawing procedure.

Response

See response made to same comment under Section 3210.1

Section 3210.3

Comment Magma Power Company, (23).

In order to avoid any ambiguity as to the intent of this section, the period at the end of this section after the word "drawing" should be changed to a comma and the following words added: "subject to determination of priorities as otherwise provided for herein."

Response

Action taken on the comment. The regulation has been revised to clarify the intent of the regulation as to two specific filing situations.

Section 3210.3

Comment Chevron Oil Company, (43)

This regulation could cause lands included in an application for a noncompetitive lease to be classified as KGRA lands.

Response

No action taken on the comment. See response under 3210.1.

Section 3210.3

Comment Chevron Oil Company, (36).

Too much emphasis is being placed on "competitive interest" in the designation of a "KGRA."

Response

No action taken on the comment. The regulations, as drafted are considered necessary to comply with the congressional intent of the Geothermal Steam Act which requires that noncompetitive leases will not be issued for lands within a KGRA at the time of lease issuance. Congress obviously intended that competitive interest was to be a major consideration in determining a KGRA since the Act spells out competitive interest as one of the criteria. Also, in order to ensure receipt of fair market value where competitive interest is demonstrated, a competitive sale is the best means to accomplish this goal.

Section 3210.4

Comment American Thermal Resources, Inc., (13).

The last sentence of this regulation appears to contravene Section 4 of Public Law 51-581, "if the lands to be leased are not within any known geothermal resources area, the qualified person first making application for the lease shall be entitled to a lease of such lands without competitive bidding." The last sentence of the regulation should be removed or be immediately followed by a statement of the appeal recourse available to the applicant.

Response

No action taken on the comment. The regulations, as drafted, provide that any person adversely affected by any official action or decision may appeal therefrom.

Section 3210.4

Comment Union Oil Company, (43); Solicitor's Office, (49);

This provision allows an authorized officer to reject an application without cause. An applicant should be awarded a lease if he meets the requirements imposed by these rules. The last sentence of this section should be deleted.

Response

No action taken on the comment. The regulations, as drafted, provide that any person adversely affected by any official action or decision may appeal therefrom.

Section 3210.4

Comment Western Oil and Gas Association, (16); Getty Oil Company, (21); Magma Power Company, (23); Solicitor's Office, (49).

It does not seem that it was intended by this section that an application for a noncompetitive lease be rejected without reason. Therefore, I suggest insertion after the word "lease" and before the word "even" in the third line from the end of the section the following words: "because of noncompliance with the regulations."

Response

No action taken on the comment. The regulation, as drafted, is considered necessary for proper multiple use land management, conservation of the resources, and protection of the environment.

Section 3210.5

Comment Gulf Oil Company, (18).

Add a subsection designated §3210.5. Multiple filings patterned after §3112.5.2. This added regulation should at the very least provide: "No applicant shall have an interest in more than one application covering the same lands or any portion thereof."

Response

Action taken on the comment. Section 3211.2 has been modified to accommodate the comment. The regulations should clarify this point. Presently it has to be inferred that a similar provision applies to applications filed under 3210.

Section 3211.1

Comment Chevron Oil Company, (36).

No time period for filing nominations is expressed in Subpart 3211. A 30 day period should be provided to give all interested parties an equal chance to participate.

Response

Action taken on the comment. The regulations, as revised, require the Director to publish from time to time a notice which will provide a specific simultaneous filing period in which applications will be received and considered as simultaneously filed with priority to be determined by a drawing.

Section 3211.1

Comment Bureau of Land Management, (28).

There is no mention of environmental reporting in either of these subsections. New terms and conditions or a new lease should be based in part on environmental analysis or at least a review of previous environmental analysis.

Response

No action taken on the comment. The regulation, as drafted, is considered adequate to provide a complete review of all lease terms and conditions, conditions prevailing at the time of readjustment, and all pertinent data available at such time.

Section 3211.2

Comment Southern California Edison Co., (29).

A prescribed lease application or nomination form should be adopted in order to avoid any question of whether the applicant complied with all of the Secretary's requirements.

Response

Action taken on the comment. The regulations, as drafted, provide that a notice will be published setting forth the requirements for a complete application. A form approved by the Director will be adopted.

Section 3211.3

Comment Chevron Oil Company, (36).

This regulation should provide for giving notice to each nominator that he has a specified period of time within which to qualify for a lease if, in fact, the form of nomination submitted by him does not already contain the necessary qualifying information.

Response

No action taken on the comment. The authorized officer's decision will inform the applicant that he has a specific time limit to qualify for a lease as well as the penalty for failure to comply within the specified time frame.

Section 3220.4

Comment Magma Power Company, (23); Union Oil Company, (43);
Solicitor's Office, (49).

In order to properly advise prospective bidders of the conditions of their bids in the event preferential rights exist, the period at the end of the section should be eliminated and the following words should be added: "and a statement of the party who has been granted a preferential right to meet the high bid, where applicable."

Response

No action taken on the comment. The notice of sale will contain the name and address of the grandfather claimant and a legal description of the lands claimed under the grandfather right. No provision is made in the subject regulation since it has application only for that period of time required to resolve the grandfather rights.

Series 3220.6

Comment Magma Power Company, (23); Solicitor's Office, (49).

The word "or" has been inadvertently omitted before the words "regulations" and "as" on line five of the section; and for clarification purposes the words "invitation" and "covering the lands involving" should be stricken on line eight, continuing to line nine of the section; and after the word "bids" on line eight the words "shall cover" should be inserted. The words "where applicable" should be inserted at the end of the second sentence.

Response

Action taken on the comment. The regulations have been revised to eliminate all the "excepting" language in the second sentence after the word "time." In effect, no accepting or rejecting of bids will take place when the bids are opened. The authorized officer will make such a decision at the earliest opportunity after due deliberation.

Section 3230.1-7

Comment Western Geothermal Inc., (34).

This deals with lease acreage limitation. The mechanics of arriving at acreage limitations is not entirely clear in this Subpart. One specific point involved here is how acreage limitations, in the event of exercise of rights to conversion, as provided for in Subpart 3230, are handled. For example, if Grandfather Rights are exercised, entitling an applicant to something less than 1280 acres, can the applicant apply for a small parcel of adjacent area to total 1280 acres, or can he simply hold the conversion acreage without applying for additional acreage? Further, can non-contiguous parcels in the same general area be combined to make the 1280 acre minimum?

Response

No action taken on the comment. The regulations, as drafted, are requirements of the Act. The minimum acreage limitation is expressly excepted in Section 3203.2 with respect to conversion leases issued pursuant to confirmed grandfather rights. A conversion lease cannot include lands not subject to a conversion right. A conversion lease cannot exceed 2560 acres, except where the rule of approximation applies.

In addition, the regulations have been revised to provide for a minimum lease size of 640 acres with certain exceptions identified in Section 3203.2. Non-contiguous lands can be combined to satisfy the 640 acre minimum, provided the tracts are isolated. In other words, adjoining vacant unappropriated acreage must be included in a lease application in order to satisfy the minimum acreage requirement.

Section 3230.3-2(c)(3)

Comment Western Oil and Gas Association, (16).

Language should be added to describe the type of data and the amount of detailed information requested.

Response

No action taken on comment. The geological, geophysical, and engineering data acquired in exploration, development, and production could vary widely by individual applicants. The purpose of this information is to demonstrate the expenditures claimed. It would not be practical to attempt to set forth in the regulations a description of the type of data and the amount of detail required. This will have to be determined by each applicant on the basis of what he feels is required to support his claimed expenditures. If different types of data or further detail of submitted data is needed, the authorized officer will detail this in a written request for supplemental information. No application for a conversion lease will be rejected out of hand for failure to have information considered necessary and sufficient by the authorized officer without affording the applicant an opportunity to satisfy the deficiency or gap in the information and data needed to support the grandfather claim.

Section 3241.1

Comment Bureau of Land Management, (46).

Although the act does not provide for lease extensions by simple application therefor, provisions are made under proposed regulation Section 3241 for such extensions. However, the period of extension is not designated. If such extensions are to be allowed, the length of extension should be included in the regulations.

Response

Action taken on comment. The statute does not provide for an extension upon application only. An extension is automatically granted by operation of law for the periods of time and under the circumstances identified in Section 6 of the Geothermal Steam Act, and therefore requires no application to be filed. The regulations have been revised to eliminate Subpart 3241.

Section 3241.5

Comment George D. Rowan, (9).

This section requires responsibilities that are unreasonable, particularly after discovery.

Response

The regulations have been revised to eliminate Subpart 3241.

Section 3241.5

Comment Getty Oil Company, (21).

In the case of a lease upon which shut in commercial geothermal wells have been drilled, the lessee should be given 90 days advance written notice of expiration.

Response

Action taken on the comment. The regulations have been revised to eliminate subpart 3241.

Section 3242.1-1 (Now 3241.1-1)

Comment American Thermal Resources, Inc., (13).

The limitation of 640 acres being in the assigned or reassigned portion of a lease is impractical. A forty or eighty acre minimum appears more practical as these would more nearly coincide with drilling and spacing units.

Response

No action taken on the comment. The regulations retain the 640 acre minimum assignment provision, except a provision was added whereby the Secretary has discretion to reduce the minimum acreage in the interest of conservation of the resources. Generally, assignments of less than 640 acres would impede timely and orderly development and create a delay for block up of a development unit. Where leases have been issued for less than 640 acres, as provided for in Section 3203.2 of these regulations, the assignment must be for the total acreage in the lease.

Section 3242.1-1 (Now 3241.1-1)

Comment Chevron Oil Company, (36).

Section should be amended to recognize an assignment of a lease containing less than 640 acres because of an isolated tract situation. This conforms to our recommendation in respect to 3203.2.

Response

No action taken on the comment. The regulations permit assignments of less than 640 acres provided the lease covers less than 640 acres. In such case, all lands included in the lease must be assigned. However, assignments cannot be made of one or more isolated parcels included in a lease unless the 640 acre minimum rule with respect to the assigned and retained portions is satisfied.

Section 3242.1-1 (Now 3241.1-1)

Comment Southern California Edison Co., (29).

640 acres is considered too restrictive with regard to assignment of leases. It is strongly recommended that the minimum assignment of a lease be reduced to 10 acres. It is felt that this is an adequate amount of space upon which to construct a 50 megawatt commercial generating facility, such facility being considered to be as small as it is economically feasible. Furthermore, since a utility can only hold 20,480 acres in any one state as the regulations are now written, any utility who has leased to its maximum limit will probably purchase effluent from other lessees. Therefore, the utility would want a surface right to use the land. It is suggested that the 10 acre assignment could be limited to generating facilities.

Response

No action taken on the comment. The regulations retain the 640 acre minimum assignment provision except a provision was added whereby the Secretary has discretion to reduce the minimum acreage in the interest of conservation of the resources. Special permits will be issued for power generating plants and will provide acreage needed to accommodate such a facility.

Section 3242.1-1(c) (Now 3241.1-1(c))

Comment Magma Power Company, (23); Solicitor's Office, (49).

The present wording of this section creates uncertainty as to the right of an Operator to operate with respect to the entire working interest, although owning less than the entire working interest. This is obviously not the intention of the section. To clarify this point there should be added after the word "of" and before the word "the" on the last line of this section the following words: "not less than". It appears to me that the intent of this section is to avoid multiple assignments of working interest to persons who are not charged with the operating responsibility. On the other hand, a bona fide Operator operates for the entire working interest, although he may actually have less than the entire working interest in the lease. These added words clarify what appears to me to be the true intent of the section and meets the requirements of the usual bona fide operating agreement between co-Lessees.

Response

Action taken on the comment. The regulations have been revised to add the suggested language.

Section 3242.2-2 (Now 3241.2-2)

Comment Bureau of Land Management, (28).

Regarding "qualification of corporations" - How about associations (partnerships) or other entity?

Response

Action taken on the comment. The regulations have been revised to add language covering associations, including partnerships.

Section 3242.7-2(a)(2) Now 3241.7-2(a)(2))

Comment Bureau of Land Management, (28).

Last word - "hereof" - seems incorrect.

Response

Action taken on the comment. The regulations have been revised to substitute the word "herein" in lieu of the word "hereof."

Section 3242.9 (Now 3241.9)

Comment Phillips Petroleum Company, (19); Bureau of Land Management, (28).

The situation where an assignment is made of an undivided interest in a part of the lands covered by a lease is not covered by this section. It is suggested that this section should specifically provide that such an assignment shall not segregate the lease.

Response

Action taken on the comment. The regulations have been revised to accommodate the comment.

Section 3243.1 (Now 3242.1)

Comment Western Oil and Gas Association, (16).

Change the reference in lines 2 and 3 from "geothermal steam" to "geothermal steam and associated geothermal resources."

Response

No action taken on comment. The language in the regulations is identical to the statutory provision in Section 9 of the Act and the suggested change would be a unauthorized expansion of the authority granted by statute.

Section 3243.1 (Now 3242.1)

Comment Southern California Edison Co., (29).

The primary problem with this section is that it does not restrict the authorized officer from requiring the production of demineralized water. Such production would result in an undue waste of geothermal energy.

Subparagraph (a) states, "Beneficial production or use is not in the interest of the conservation of natural resources." This should be expanded to state that "Beneficial production and use is not in the interest of conservation of natural resources including but not limited to the production of water that would result in an undue waste of geothermal energy."

Response

No action taken on comment. The regulations provide the authority to exclude such production which is hostile to conservation of natural resources or for other reasons.

Section 3243.3-3 (Now 3242.2-3)

Comment Bureau of Land Management, (28).

This paragraph doesn't seem to say what is intended. Perhaps it could read "acquire the well with casing installed at the fair market value of the casing."

Response

Action taken on the comment. The regulations have been revised to include the suggested language.

Section 3243.3-4 (Now 3242.2-4)

Comment State of Colorado, (37).

It is very likely that most of the geothermal development in the U.S. is going to occur in the western U.S. In most western states, the law states that the waters (ground and surface) belong to the people and that one can only appropriate unappropriated water. As it can very scientifically be argued that there is direct connection between the surface waters and the waters in the geothermal reservoirs the states water laws have to be followed. This should be strongly emphasized and put forth at a much earlier stage in these regulations.

Response

No action taken on comment. The regulation is considered adequate to put the public on notice that states' rights to waters vis-a-vis Federal Government rights are not in any way enlarged, diminished, or modified by these regulations.

Section 3244.2 (Now 3243.2)

Comment Union Oil Company, (43).

Under this provision exception to chargeability as to unit plans and joint operations are provided. Producing leases should be considered also as an exception to acreage chargeability.

Response

No action taken on comment. The regulation, as drafted, is consistent with the acreage limitation provisions of the statute.

Section 3244.3-2 (Now 3243.3-2)

Comment Gulf Oil Company, (18)

The last sentence requiring that a unit agreement must be signed by or in behalf of all interested parties places an impossible burden on the party attempting to organize a unit. Experienced has proven the reasonableness of obtaining sufficient executions to provide effective control of the area without the need to specify a minimum percentage.

Response

Action taken on the comment. The regulation has been revised to read "All necessary parties" which is deemed adequate to protect the interest of all parties concerned.

Section 3244.4-3 (Now 3243.4-3)

Comment Anschutz Corp., (17).

The acreage limitation of 20,480 acres in any one state is inadequate. The limitation should be 246,080 acres. Evidence already available would indicate that several KGRA's will more than double the 20,480 acre size. It then becomes very important to know when acreage committed to a unit ceases to be chargeable. Acreage should cease to be chargeable upon preliminary approval by the Secretary of Interior or his approved representative. It is in the best interests of the public and nation that an aggressive explorer not be delayed by chargeability problems caused by small acreage limitations and cumbersome approval procedures. Where final approval is refused, the operator should have at least one year to adjust his chargeability to the proper amount.

Response

No action taken on the comment. The regulation, as drafted, is consistent with acreage chargeability provisions of the statute.

Section 3244.4-3 (Now 3243.4-3)

Comment Union Oil Company, (43).

Under this provision exceptions to chargeability as to unit plans and joint operations are provided. Producing leases should be considered also as an exception to acreage chargeability.

Response

No action taken on the comment. Authority not provided by the Act.

Section 3245.1 (Now 3244.1)

Comment Bureau of Land Management, (28).

Subparts (b)(3) and (b)(4) should specify who affirms compliance as is stated in (b)(2).

Response

Action taken on the comment. The regulation has been revised to delete the phrase "as prescribed by the supervisor." Responsibilities set forth in informal manual procedures.

Section 3245.1(b) (Now 3244.1(b))

Comment Union Oil Company, (43); Solicitor's Office, (49).

Line 5: The word "accruing" should be "accrued."

Response

Action taken on the comment. The regulation has been revised as suggested.

Section 3245.4 (Now 3244.4)

Comment Western Oil and Gas Association, (16); Getty Oil Company, (21); Magma Power Company, (23); Union Oil Company, (43).

The 90-day period should be enlarged to at least one year to provide the Supervisor with greater discretion in allowing time for removal of such major items as plants, pipelines, etc.

Response

No action taken on the comment. The regulation, as drafted, is considered adequate time to remove facilities on a geothermal resource lease. Power generating facilities would be built under a separate permit, lease or license issued in accordance with other appropriate regulations.

WASHINGTON, NOVEMBER 29, 1972
UNCLASSIFIED
Public Law 92-582, 1972
PART II

APPENDIX D

November 29, 1972, Proposed Regulations for Geothermal
Resources Operations on Public, Acquired and Withdrawn Lands
and

Summary of Comments Received and Departmental Responses

Geological Survey

GEOTHERMAL RESOURCE
OPERATIONS ON PUBLIC,
ACQUIRED AND
WITHDRAWN LANDS

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PART III



DEPARTMENT OF THE INTERIOR

Geological Survey



**GEOHERMAL RESOURCES
OPERATIONS ON PUBLIC,
ACQUIRED AND
WITHDRAWN LANDS**

DEPARTMENT OF THE INTERIOR

Geological Survey

[30 CFR Parts 270, 271]

GEOTHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED AND WITHDRAWN LANDS

Notice of Proposed Rulemaking

The purpose of this revision in the proposed rulemaking for implementing the Geothermal Steam Act of December 24, 1970 (30 U.S.C. 1001-1025), is to provide the public with revisions planned as a result of the public hearings and comments received on the Draft Environmental Statement and previously published proposed rulemaking on operations and units (36 F.R. 13722 and 37 F.R. 8094). The Act provides for the leasing of public lands for the purpose of geothermal resource exploration, development and production.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rulemaking process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, D.C. 20240, within 30 days of the date of publication of this notice in the FEDERAL REGISTER.

A Final Environmental Statement will be issued in accordance with the provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)) prior to promulgation of any operating and unit regulations.

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GENERAL PROVISIONS

§ 270.1 Purpose and authority.

The Geothermal Steam Act enacted on December 24, 1970 (84 Stat. 1566) referred to in this part as "the Act", authorizes the Secretary of the Interior to prescribe rules and regulations applicable to operations conducted under a lease granted pursuant to that Act, and for the development and conservation of geothermal steam and associated geothermal resources, the prevention of waste, the protection of the public interest, and the protection of water quality, and other environmental qualities. The regulations in this part shall be administered by the Director through the Chief, Conservation Division, or his duly appointed representative.

§ 270.2 Definitions.

As used in the regulations in this part, the term:

(a) "Secretary" means the Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(b) "Director" means the Director of the Geological Survey.

(c) "Supervisor" means a representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such a representative acting under his direction.

(d) "Geothermal lease" means a lease issued under 43 CFR Group 3200.

(e) "Lessee" means the individual, corporation, association, or municipality to which a geothermal lease has been issued and its successor in interest or assignee. It also means any agent of the lessee or an operator holding authority by or through the lessee.

(f) "Operator" means the individual, corporation, or association having control or management of operations on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee, or holder of rights under an approved operating agreement.

(g) "Geothermal resources" means (1) all products of geothermal processes, embracing indigenous steam, hot water, and hot brines; (2) steam and other gases, hot water, and hot brines, resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated energy found in geothermal formations; and (4) any byproduct derived therefrom.

(h) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium), which are found in solution or developed in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(i) "Participating area" means that part of the unit area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(j) "Waste" means (1) physical waste, as that term is generally understood; (2) waste of reservoir energy through inefficiency, improper use of or unnecessary dissipation of reservoir energy; (3) the location, spacing, drilling, equipping, operating, or producing of any geothermal well or wells in a manner which causes or tends to cause reduction in the quantity of geothermal energy ultimately recoverable from a reservoir under prudent and workmanlike operations or which tends to cause unnecessary or excessive surface or subsurface loss or destruction of geothermal energy; and (4) the inefficient transmission of geothermal energy from the source (wellhead) to point of utilization.

(k) "Directionally drilled well" means the deviation of a well bore from the vertical or from its normal course in an intended predetermined direction or course with respect to the points of the compass. Directionally drilled well shall not include a well deviated for the purpose of straightening a hole that has become crooked in the normal course of drilling or holes deviated at random without regard to compass direction in an attempt to sidetrack a portion of the hole on account of mechanical difficulty in drilling.

(l) "Geothermal resources operational order" or "GRO order" means a formal numbered order, issued by the Supervisor, with the prior approval of the Chief, Conservation Division, Geological Survey, which implements the regulations in this part and applies to opera-

tions in an area, region, or any significant portion thereof.

(m) "Producible well" means a well which is capable of producing geothermal resources in commercial quantities.

(n) "Commercial quantities" means quantities sufficient to pay a profit after all costs of production have been met.

(o) "Area of operations" means that area of the leased lands which is required for exploration, development, and producing operations, and which is delineated on a map or plat which is made a part of the approved plan of operations. It encompasses the area generally needed for wells, flow lines, separators, surge tanks, drill pads, mud pits, workshops, and other such facilities used for on-project geothermal resources field exploration, development, and production operations.

JURISDICTION AND FUNCTIONS OF SUPERVISOR

§ 270.10 Jurisdiction.

Drilling and production operations, handling and measurement of production, determination and collection of royalty and, in general, all operations conducted on a geothermal lease are subject to the regulations in this part and the applicable regulations contained in 43 CFR Group 3200, and are under the jurisdiction of the Supervisor for the region in which the leased land is situated, subject to the supervisory authority of the Secretary and the Director.

§ 270.11 General functions.

The Supervisor is authorized and directed to carry out the provisions of this part. He will require compliance with the terms of geothermal leases, with the regulations in this part and the applicable regulations in 43 CFR Group 3200, and with the applicable statutes. He shall act on all applications, requests, and notices required in this part. In executing his functions under this part the Supervisor shall ensure that all operations, within the area of operations, will conform to the best practice and are conducted in such manner as to protect the deposits of the leased lands and to result in the maximum ultimate recovery of geothermal resources, with minimum waste, and are consistent with the principles of the use of the land for other purposes and of the protection of the environment. Inasmuch as conditions in one area may vary widely from conditions in another area, the regulations in this part are intended to be general in nature. Detailed procedures hereunder in any particular area will be covered by GRO orders. The requirements to be set forth in GRO orders relating to surface resources or uses will be coordinated with the appropriate land management agency. The Supervisor may issue oral orders to govern lease operations, but such orders shall be confirmed in writing by the Supervisor as promptly as possible. The Supervisor may issue other orders and rules to govern the development and method for production of a deposit, field, or area. Prior

to the issuance of GRO orders and other orders and rules, the Supervisor may consult with, and receive comments from Federal and State agencies, lessees, operators, or interested parties. Before permitting other operations on the leased land, the Supervisor shall determine if the lease is in good standing, whether the lessee is authorized to conduct operations, has filed an acceptable bond, and has an approved plan of operations.

§ 270.12 Regulation of operations.

The Supervisor shall inspect and supervise operations performed under the regulations in this part to: (a) Prevent waste and damage to formations or deposits containing geothermal resources; (b) prevent unnecessary damage to other natural resources; (c) prevent degradation of the water quality; (d) protect other environmental qualities; and (e) prevent injury to life or property. The Supervisor shall issue such GRO orders as are necessary to accomplish these purposes.

§ 270.13 Required samples, tests, and surveys.

When necessary or advisable, the Supervisor shall require that adequate samples be taken and tests or surveys be made using acceptable techniques, without cost to the lessor, to determine the identity and character of formations; the presence of geothermal resources, water, or reservoir energy; the quantity and quality of geothermal resources, water or reservoir energy; the amount and direction of deviation of any well from the vertical; formation, casing, and tubing pressures, temperatures, rate of heat and fluid flow, and whether operations are conducted in a manner looking to the protection of the interests of the lessor.

§ 270.14 Drilling and abandonment of wells.

The Supervisor shall require that drilling be conducted in accordance with the terms of the lease, GRO orders, and the regulations in this part and 43 CFR Group 3200; and shall require plugging and abandonment of any well or wells no longer necessary for operations in accordance with plans approved or prescribed by him. Upon the failure of a lessee to comply with any requirement under this section, the Supervisor is authorized to perform the work at the expense of the lessee and the surety.

§ 270.15 Well spacing and well casing.

The Supervisor shall approve proposed well-spacing and well-casing programs or prescribe such modifications to the programs as he determines necessary for proper development, giving consideration to such factors as: (a) Topographic characteristics of the area; (b) hydrologic, geologic and reservoir characteristics of the field; (c) the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use; (d) protection of correlative rights; (e) minimizing well interference; (f) un-

reasonable interference with multiple use of lands; and (g) protection of the environment.

§ 270.16 Values and payment for losses.

The Supervisor shall determine the value of production accruing to the lessor where there is loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the lessor as reimbursement for such loss. Payment for such losses will be paid when billed.

§ 270.17 Suspension of operations and production.

(a) On receipt of an application filed in accordance with 43 CFR 3205.3-8 for suspension of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease), the Supervisor may, if he deems the suspension or relief warranted, approve the application.

(b) In the interest of conservation, the Supervisor may, on his own motion, suspend operations or production, or both, on any geothermal lease.

(c) Where operations or production, or both, under a lease, have been suspended, the Supervisor may approve resumption of operations or production either on his own motion or upon written request by the lessee or his agent.

(d) Whenever it appears from facts adduced by or furnished to the Supervisor that the interest of the lessor requires additional drilling or producing operations, he may, by written notice, order the beginning or resumption of such operations.

(e) Any action of the Supervisor under this Section shall be subject to the right of appeal under § 270.90.

(f) See 43 CFR 3205.3-7 and 3205.3-8 for regulations concerning requests to waive, suspend, or reduce payments of rental or royalty, and extensions of leases on which operations or production have been suspended.

REQUIREMENTS FOR LESSEES

(INCLUDING OPERATORS)

§ 270.30 Lease terms, regulations, waste, damage, and safety.

(a) The lessee shall comply with the lease terms, lease stipulations, applicable laws and regulations and any amendments thereof, GRO orders, and other written or oral orders of the Supervisor. All oral orders (to be confirmed in writing as provided in § 270.11) are effective when issued unless otherwise specified.

(b) The lessee shall take all reasonable precautions to prevent: (1) Waste; (2) damage to any natural resource including trees and other vegetation, fish and wildlife and their habitat; (3) injury or damage to persons, real or personal property; and (4) any environmental pollution or damage.

§ 270.31 Designation of operator or agent.

In all cases where operations are not conducted by the lessee but are to be conducted under authority of an unapproved operating agreement, assignment

or other arrangement, a "designation of operator" shall be submitted to the Supervisor, in a manner and form approved by him, prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under the regulations in this part. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Supervisor.

§ 270.32 Local agent.

When required by the Supervisor, the lessee shall designate a local representative empowered to receive notices and comply with orders of the Supervisor issued pursuant to the regulations in this part.

§ 270.33 Drilling and producing obligations.

(a) The lessee shall diligently drill and produce such wells as are necessary to protect the lessor from loss by reason of production on other properties, or in lieu thereof, with the consent of the Supervisor, shall pay a sum determined by the Supervisor as adequate to compensate the lessor for failure to drill and produce any such well.

(b) The lessee shall promptly drill and produce such other wells as the Supervisor may require in order that the lease be developed and produced in accordance with good operating practices. (See 43 CFR Part 3234.)

§ 270.34 Plan of operation.

Prior to commencing any operations on the lease, the lessee shall submit and obtain the approval of the Supervisor and the appropriate land management agency of a plan of operation for the area. Such plan shall include:

(a) the proposed location of each well including a layout showing the position of the mud tanks, reserve pits, cooling towers, pipe racks, etc.;

(b) existing and planned access and lateral roads;

(c) location and source of water supply and road building material;

(d) location of camp sites, air-strips, and other supporting facilities;

(e) methods for disposing of waste material; and

(f) all pertinent information or data which the Supervisor may require to support the plan of operations for the utilization of geothermal resources and the protection of the environment.

§ 270.35 Subsequent well operations.

After completion of all operations authorized under any previously approved notice or plan, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid injection until he has submitted to the Supervisor in writing a new plan of operations and has received written approval from him. However, in an emer-

gency a lessee may take action to prevent damage without receiving prior approval from the Supervisor, but in such cases the lessee shall report his action to the Supervisor as soon as possible.

§ 270.36 Well designations.

The lessee shall mark each derrick upon commencement of drilling operations and each producing or suspended well in a conspicuous place with his name or the name of the operator, the serial number of the lease, the number and location of the well. Whenever possible, the well location shall be described by section or tract, township, range, and by quarter-quarter section or lot. The lessee shall take all necessary means and precautions to preserve these markings.

§ 270.37 Well records.

(a) The lessee shall keep for each well at his field headquarters or at other locations conveniently available to the Supervisor, accurate and complete records of all well operations including production, drilling, logging, directional well surveys, casing, perforation, safety devices, redrilling, deepening, repairing, cementing, alterations to casing, plugging, and abandoning. The records shall contain a description of any unusual malfunction, condition or problem; all the formations penetrated; the content and character of mineral deposits and water in each formation; thermal gradients, temperatures, pressures, analyses of geothermal waters, the kind, weight, size, grade, and setting depth of casing; and any other pertinent information.

(b) The lessee shall, within 30 days after completion of any well, transmit to the Supervisor copies of the records of all operations in a form prescribed by the Supervisor.

(c) Upon request of the Supervisor, the lessee will furnish: (1) legible, exact copies of service company reports on cementing, perforating, acidizing, analyses of cores, electrical, and temperature logs, chemical analyses of steam and waters, or other similar services; (2) other reports and records of operations in the manner and form prescribed by the Supervisor.

§ 270.38 Samples, tests, and surveys.

(a) The lessee, when required by the Supervisor, will make adequate sampling, tests and/or surveys using acceptable techniques, to determine the presence, quantity, quality, and potential of geothermal resources, mineral deposits, or water; the amount and direction of deviation of any well from the vertical; and/or formation temperatures and pressures, casing, tubing, or other pressures and such other facts as the Supervisor may require. Such tests or surveys shall be made without cost to the lessor.

(b) The lessee shall, without cost to the lessor, take such formation samples or cores to determine the identity and character of any formation as are required and prescribed by the Supervisor.

§ 270.39 Directional survey.

The Supervisor may require an angular deviation and directional survey to be

made of the finished hole of each directionally drilled well. The survey shall be made at the risk and expense of the lessee unless requested by an offset lessee, and then, at the risk and expense of the offset lessee. A copy of the survey shall be furnished the Supervisor.

§ 270.40 Well control.

The lessee or operator shall: (a) Take all necessary precautions to keep all wells under control at all times; (b) utilize trained and competent personnel; (c) utilize properly maintained equipment and materials; and (d) use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers, and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

§ 270.41 Pollution.

The lessee shall comply with all Federal and State standards with respect to the control of all forms of air, land, water, and noise pollution, including, but not limited to, the control of erosion and the disposal of liquid, solid, and gaseous wastes. The Supervisor may, in his discretion, establish additional and more stringent standards, and, if he does so, the lessee shall comply with those standards. Plans for disposal of well effluents must take into account effects on surface and subsurface waters, plants, fish and wildlife and their habitats, atmosphere, or any other effects which may cause or contribute to pollution, and such plans must be approved by the Supervisor before action is taken under them.

§ 270.42 Noise abatement.

The lessee shall minimize noise during exploration, development and production activities. Welfare of the operating personnel and the public must not be affected as a consequence of the noise created by the expanding gases. The method and degree of noise abatement shall be as approved by the Supervisor.

§ 270.43 Land subsidence and seismic activity.

In the event subsidence or seismic activity results from the production of geothermal resources, as determined by monitoring activities by the lessee or a government body, the lessee shall take such action as required by the lease or by the Supervisor.

§ 270.44 Pits and sumps.

The lessee shall provide and use pits and sumps of adequate capacity and design to retain all materials and fluids necessary to drilling, production, or other operations unless otherwise specified by the Supervisor. In no event shall the con-

tents of a pit or sump be allowed to: (a) Contaminate streams, artificial canals or waterways, ground waters, lakes or rivers; (b) adversely affect environment, persons, plants, fish and wildlife and their habitats; or (c) damage the aesthetic values of the property or adjacent properties. When no longer needed, pits and sumps are to be filled and covered and the premises restored to a near natural state, as prescribed by the Supervisor.

§ 270.45 Well abandonment.

The lessee shall promptly plug and abandon any well on the leased land that is not used or useful. No well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Supervisor. Before abandoning a producible well, the lessee shall submit to the Supervisor a statement of reasons for abandonment and his detailed plans for carrying on the necessary work. A producible well may be abandoned only after receipt of written approval by the Supervisor. No well shall be plugged and abandoned until the manner and method of plugging have been approved or prescribed by the Supervisor. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Supervisor. Drilling equipment shall not be removed from any suspended drilling well without taking adequate measures to close the well and protect the subsurface resources.

§ 270.46 Accidents.

The lessee shall take all reasonable precautions to prevent accidents and shall notify the Supervisor within 24 hours of all accidents on the leased land, and shall submit a full report thereon within 15 days.

§ 270.47 Workmanlike operations.

The lessee shall carry on all operations and maintain the property at all times in a workmanlike manner, having due regard for the conservation of the property and the environment and for the health and safety of employees. The lessee shall remove from the property or store, in an orderly manner, all scrap or other materials not in use.

§ 270.48 Departure from orders.

The Supervisor may prescribe or approve either in writing or orally with prompt written confirmation, waivers or prompt written confirmation, variances from the requirements of GRO orders and other orders issued pursuant to these regulations, when such departures are necessary for the proper control of a well, conservation of natural resources, protection of human health and safety, property, or the environment.

§ 270.49 Sales contracts.

The lessee shall file with the Supervisor within 30 days after the effective date of the sales contract a copy of any

contract for the disposal of geothermal resources from the lease.

§ 270.50 Royalty payments.

The lessee shall pay all royalties as due under the terms of the lease. Payments of royalties are due not later than the last day of the month following the month in which the resource is sold or utilized, and shall be by check, bank draft, or money order, drawn to the order of the United States Geological Survey.

MEASUREMENT OF PRODUCTION AND COMPUTATION OF ROYALTIES

§ 270.60 Measurement of geothermal resources.

The lessee shall measure or gauge all production in accordance with methods approved by the Supervisor. The quantity and quality of all production shall be determined in accordance with the standard practices, procedures, and specifications generally used in industry. All measuring equipment shall be tested periodically and, if found defective, the Supervisor will determine the quantity and quality of production from the best evidence available.

§ 270.61 Determination of content of byproducts.

The lessee shall periodically furnish the Supervisor the results of periodic tests showing the content of byproducts in the produced geothermal fluid and gases. Such tests shall be taken as specified by the Supervisor and by the method of testing approved by him.

§ 270.62 Value of geothermal production for computing royalties.

(a) The value of geothermal production from the leased premises for the purpose of computing royalties shall be the reasonable value of the energy and the byproducts attributable to the lease as determined by the Supervisor. In determining the reasonable value of the energy and the byproducts the Supervisor shall consider:

(1) The highest price paid for a majority of the production of like quality in the same field or area;

(2) The total consideration accruing to the lessee from any disposition of the geothermal production;

(3) The value of the geothermal production used by the lessee;

(4) The value and cost of alternate available energy sources and byproducts;

(5) The cost of exploration and production, exclusive of taxes;

(6) The economic value of the resource in terms of its ultimate utilization;

(7) Production agreements between producer and purchaser; and

(8) Any other matters which he may consider relevant.

(b) Under no circumstances shall the value of any geothermal production for the purposes of computing royalties be less than:

(1) The total consideration accruing to the lessee from the sale thereof in

cases where geothermal resources are sold by the lessee to another party;

(2) That amount which is the value of the end product attributable to the geothermal resource produced from a particular lease where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing, power production, or other industrial activity; or

(3) When a part of the resource only is utilized by the lessee and the remainder sold, the sum of the value of the end product attributable to the geothermal resource and the sales price received for the geothermal resources

§ 270.63 Computation of royalties.

(a) The value of geothermal production from a particular lease as determined pursuant to § 270.62 hereof, shall be apportioned between geothermal steam, heat, and other forms of energy and the byproducts.

(b) The royalties payable shall be the sum of (1) the amount resulting from the multiplication of the value attributable to the geothermal steam, heat, and other forms of energy by the royalty rate set for such forms of geothermal energy in the lease and (2) the amount resulting from the multiplication of the value attributable to byproducts by the royalty rate for byproducts set in the lease.

§ 270.64 Commingling production.

The supervisor may authorize a lessee to commingle production from wells on his lease with production from other leases held by him or by other lessees subjects to such conditions as he may prescribe.

REPORTS TO BE MADE BY ALL LESSEES (INCLUDING OPERATORS)

§ 270.70 General requirements.

Information required to be submitted in accordance with the regulations in this part shall be furnished as directed by the Supervisor. Copies of forms can be obtained from the Supervisor and must be filed with that official within the time limit prescribed.

§ 270.71 Application for permit to drill, redrill, deepen, or plug-back.

(a) A permit to drill, redrill, deepen, or plug-back a well on Federal lands must be obtained from the Supervisor before the work is begun. The application for the permit, which shall be filed in triplicate with the Supervisor, shall state the location of the well in feet, and direction from the nearest section or tract lines as shown on the official plat of survey or protracted surveys; the altitude of the ground and derrick floor above sea level and how it was determined, and should be accompanied by a proposed plan of operations as required by § 270.34 of this part.

(b) The proposed drilling and casing plan shall be outlined in detail under the heading "Details of Work" in the applications referred to herein, and shall describe the type of tools and equipment to be used, the proposed depth to which the well will be drilled, the estimated

depths to the top of important markers, the estimated depths at which water, geothermal resources, or other mineral resources are expected, the proposed casing program (including the size and weight of casing), the depth at which each string is to be set, and the amount of cement and mud to be used, the drilling method and type of circulating media (water, mud, foam, air or combinations thereof), the type of blowout prevention equipment to be used, the proposed coring, logging, or other program (such as drilling time log and sample description) to be used to determine the formations penetrated and the proposed program for determining geothermal gradients and the sampling and analysis of geothermal resources.

(c) Each application shall be accompanied by a plat showing the surface and expected bottomhole locations and the distances from the nearest section or tract lines as shown on the official plat of survey or protracted surveys. The scale shall not be less than 2,000 feet to 1 inch.

(d) Each application should be accompanied by supporting structural and hydrologic information based on available geologic and geophysical data.

§ 270.72 Sundry notices and reports on wells.

(a) Any written notice of intention to do work or to change plans previously approved must be filed with the Supervisor in triplicate, unless otherwise directed, and must be approved by him before the work is begun. If, in case of emergency, any notice is given orally or by wire, and approval is obtained, the transaction shall be confirmed in writing. A subsequent report of the work performed must also be filed with the Supervisor.

(b) Casing test: Notice shall be given in advance to the Supervisor or his representative of the date and time when the operator expects to make a casing test. Later, by agreement, the exact time shall be fixed. In the event of casing failure during the test, the casing must be repaired or replaced or recemented as required by the Supervisor or his representative. The results of the test must be reported within 30 days after making a casing test. The report must describe the test completely and state the amount of mud and cement used, the lapse of time between running and cementing the casing and making the test, and the method of testing.

(c) Repairs or conditioning of well: Before the repairing or conditioning of a well, a notice setting forth in detail the plan of work must be filed with, and approved by, the Supervisor. A detailed report of the work accomplished and the methods employed, including all dates, and the results of such work must be filed within 30 days after completion of the repair work.

(d) Well stimulation: Before the lessee commences stimulation of a well by any means, a notice, setting forth in detail the plan of work, must be filed with and approved by the Supervisor. The notice shall name the type of stimulant and the

amount to be used. A report showing the amount of stimulant used and the production rate before and after stimulation must be filed within 30 days from completion of the work.

(e) Altering casing in a well: Notice of intention to run a liner or to alter the casing by pulling or perforating by any means must be filed with and approved by the Supervisor before the work is started. This notice shall set forth in detail the plan of work. A report must be filed within 30 days after completion of the work stating exactly what was done and the results obtained.

(f) Notice of intention to abandon well: Before abandonment work is begun on any well, whether a drilling well, geothermal resources well, water well, or so-called dry hole, notice of intention to abandon shall be filed with, and approved by, the Supervisor. The notice must be accompanied by a complete log, in duplicate, of the well to date, provided the complete log has not been filed previously, and must give a detailed statement of the proposed work, including such information as kind, location, and length of plugs (by depths), plans for mudding, cementing, shooting, testing, and removing casing, and any other pertinent information.

(g) Subsequent report of abandonment: After a well is abandoned or plugged, a subsequent record of work done must be filed with the Supervisor. This report shall be filed separately within 30 days after the work is done. The report shall give a detailed account of the manner in which the abandonment or plugging work was carried out, including the nature and quantities of materials used in plugging and the location and extent (by depths) of the plugs of different materials; records of any tests or measurements made, and of the amount, size, and location (by depths) of casing left in the well; and a detailed statement of the volume of mud fluid used, and the pressure attained in mudding. If an attempt was made to part any casing, a complete report of the methods used and results obtained must be included.

§ 270.73 Log and history of well.

The lessee shall furnish in duplicate to the Supervisor, not later than 30 days after the completion of each well, a complete and accurate log and history, in chronological order, of all operations conducted on the well. A log shall be compiled for geologic information from cores or formations samples and duplicate copies of such log shall be filed. Duplicate copies of all electric logs, temperature surveys, water and steam analyses, hydrologic or heat flow tests, or direction surveys, if run, shall be furnished.

§ 270.74 Monthly report of operations.

A report of operations for each lease must be made for each calendar month, beginning with the month in which drilling operations are initiated. The report must be filed in duplicate with the Supervisor on or before the last day of the month following the month for which the report is filed unless an extension of

time for the filing of the report is granted by the Supervisor. The report shall disclose accurately all operations conducted on each well during the month, the status of operations on the last day of the month, and a general summary of the status of operations on the leased lands. The report must be submitted each month until the lease is terminated or until omission of the report is authorized by the Supervisor. The report shall show for each calendar month:

(a) The lease serial number or the unit or communitization agreement number which shall be inserted in the upper right corner;

(b) Each well listed separately by number, and its location by 40-acre subdivision (quarter-quarter section or lot), section number, township, range, and meridian;

(c) The number of days each well was produced, whether steam or hot water or both were produced, and the number of days each input well was in operation, if any;

(d) The quantity of production and any byproducts obtained from each well, if any are recovered;

(e) The depth of each active or suspended well, and the name, character, and depth of each formation drilled during the month, the date and reason for every shutdown, the names and depths of important formation changes, the amount and size of any casing run since the last report, the dates and results of any tests conducted, and any other noteworthy information on operations not specifically provided for in the form.

(f) The footnote must be completely filled out as required by the Supervisor. If no sales were made during the calendar month, the report must so state.

§ 270.75 Monthly report of sales and royalty.

A report of sales and royalty for each productive lease must be filed each month once sales of production are made even though sales may be intermittent, unless otherwise authorized by the Supervisor. Total volumes of geothermal resources produced and sold, the value of production, and the royalty due the lessor must be shown. If byproducts are being recovered, the same requirement shall be applicable. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the United States. Payment or royalty is to be made pursuant to § 270.49 unless otherwise authorized by the Supervisor.

§ 270.76 Forms or reports.

When forms or reports other than those referred to in the regulations in this part may be necessary, instructions for the filing of such forms or reports will be given by the Supervisor.

§ 270.77 Public inspection of records.

Geologic and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect.

PROCEDURE IN CASE OF VIOLATION OF
THE REGULATIONS OR LEASE TERMS

§ 270.80 Noncompliance with regula-
tions or lease terms.

Whenever a lessee or anyone acting under his authority fails to comply with the provisions of the regulations or lease terms, the Supervisor shall give the lessee notice to remedy any defaults or violations. The Supervisor is authorized to shut down any operations which he determines are unsafe or are causing or can cause pollution. Failure by the lessee to perform or commence the necessary remedial action pursuant to the notice will result in a shut down of operations and may result in referral of the matter to the authorized officer of the Bureau of Land Management for action pursuant to 43 CFR 3245.3.

APPEALS

§ 270.90 Appeals.

(a) Any party to a case adversely affected by a final order or decision of an officer of the Conservation Division of the Geological Survey shall have a right to appeal to the Director, unless the order or decision was approved by the Secretary or the Director prior to promulgation.

(b) An appeal to the Director may be taken by filing a notice of appeal in the office of the official who issued the order or decision within 30 days from service of the order or decision. The notice of appeal shall incorporate, or be accompanied by, such written showing and argument on the facts and the law as the appellant may deem adequate to justify reversal or modification of the order or decision. Within the same 30-day period, the appellant will be permitted to file in the office of the officer who issued the order or decision additional statements of reasons and written arguments or briefs. The officer with whom the appeal is filed shall transmit the appeal and accompanying papers to the Director with a full report and his recommendation on the appeal. The Director will review the record and render a decision in the case.

(c) Oral argument in any case pending before the Director will be allowed on motion in the discretion of such officer and at a time to be fixed by him.

(d) With the exception of the time fixed for filing a notice of appeal, the time for filing any document in connection with an appeal may be extended by the Director. A request for an extension of time must be filed within the time allowed for filing of the document and must be filed in the same office in which the document in connection with which the extension is requested must be filed.

(e) Any party to a case adversely affected by a decision of the Director under this part shall have a right of appeal to the Board of Land Appeals in the Office of Hearings and Appeals, Office of the Secretary, in accordance with the procedures provided in 43 CFR Part 4, Department Hearings and Appeals Procedures.

PART 271—GEOTHERMAL RE-
SOURCE UNIT PLAN REGULATIONS
(INCLUDING SUGGESTED FORMS)

GENERAL PROVISIONS

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AUTHORITY: The provisions of this Part 271 issued under section 18 of the Geothermal Steam Act of 1970 (84 Stat. 1566) (see 43 CFR Subpart 3244).

§ 271.1 Introduction.

The regulations in this part prescribe the procedure to be followed and the requirements to be met by holders of Federal geothermal leases (see § 271.2d) and their representatives who wish to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan for the development of any geothermal resources pool, field, or like area, or any part thereof. Such agreements may be initiated by lessees, or where in the interest of conserving natural resources they are deemed necessary they may be required by the Director.

§ 271.2 Definitions.

The following terms, as used in this part or in any agreement approved under the regulations in this part, shall have the meanings here indicated unless otherwise defined in such agreement:

(a) *Unit agreement.* An agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without regard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

(b) *Cooperative agreement.* An agreement or plan of development and operations for the production and utilization of geothermal resources made subject thereto in which separate ownership units are independently operated without allocation of production.

(c) *Agreement.* For convenience, the term "agreement" as used in the regulations in this part refers to either a unit

or a cooperative agreement as defined in paragraphs (a) and (b) of this section unless otherwise indicated.

(d) *Geothermal lease.* A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Part 3200, and, unless the context indicates otherwise, "lease" means a geothermal lease.

(e) *Unit area.* The area described in a unit agreement as constituting the land logically subject to development under such agreement.

(f) *Unitized land.* The part of a unit area committed to a unit agreement.

(g) *Unitized substances.* Deposits of geothermal resources recovered from unitized land by operation under and pursuant to a unit agreement.

(h) *Unit operator.* The person, association, partnership, corporation, or other business entity designated under a unit agreement to conduct operations on unitized land as specified in such agreement.

(i) *Participating area.* That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that lands are committed to the unit agreement.

(j) *Working interest.* The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in a unit or cooperative agreement, the owner of such interest is vested with the right to explore for, develop, produce, and utilize such resources. The right delegated to the unit operator as such by the unit agreement is not to be regarded as a working interest.

(k) *Secretary.* The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(l) *Director.* The Director of the U.S. Geological Survey.

(m) *Supervisor.* A representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

§ 271.3 Designation of area.

An application for designation of an area as logically subject to development and/or operation under a unit or cooperative agreement may be filed, in triplicate, by any proponent of such an agreement through the Supervisor. Each copy of the application shall be accompanied by a map or diagram on a scale of not less than 1 inch to 1 mile, outlining the area sought to be designated under this section. The Federal, State, and privately owned land should be indicated on said map by distinctive symbols or colors and Federal geothermal leases and lease ap-

plications should be identified by serial number. Geological information, including the results of geophysical surveys, and such other information as may tend to show that unitization is necessary and advisable in the public interest should be furnished in triplicate. Geological and geophysical information and data so furnished will not be available for public inspection, as provided by 5 U.S.C. section 552(b), without the consent of the proponent. The application and supporting data will be considered by the Director and the applicant will be informed of the decision reached. The designation of an area, pursuant to an application filed under this section, shall not create an exclusive right to submit an executed agreement for such area, nor preclude the inclusion of such area or any part thereof in another unit area.

§ 271.4 Preliminary consideration of agreements.

The form of unit agreement set forth in § 271.12 is acceptable for use in unproved areas. The use of this form is not mandatory, but any proposed departure therefrom should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. In areas proposed for unitization in which a discovery of geothermal resources has been made, or where a cooperative agreement is contemplated, the proposed agreement should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. The proposed form of agreement should be submitted in triplicate and should be plainly marked to identify the proposed variances from the form of agreement set forth in § 271.12.

§ 271.5 State land.

Where State-owned land is to be included in the unit, approval of the agreement by appropriate State officials should be obtained prior to its submission to the Department for approval of the executed agreement. When authorized by the laws of the State in which the unitized land is situated, provisions may be made in the agreement accepting State law to the extent that they are applicable to non-Federal unitized land.

§ 271.6 Qualifications of unit operator.

A unit operator must qualify as to citizenship in the same manner as those holding interests in geothermal leases issued under the Geothermal Steam Act of 1970. The unit operator may be an owner of a working interest in the unit area or such other party as may be selected by the owners of working interests and approved by the Supervisor. The unit operator shall execute an acceptance of the duties and obligations imposed by the agreement. No designation of, or change in, a unit operator will become effective unless and until approved by the Supervisor, and no such approval will be granted unless the unit operator is deemed qualified to fulfill the duties and obligations prescribed in the agreement.

§ 271.7 Parties to unit or cooperative agreement.

The owners of any rights, title, or interest in the geothermal resources deposits to be developed and operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Supervisor and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

§ 271.8 Approval of an executed unit or cooperative agreement.

(a) A duly executed unit or cooperative agreement will be approved by the Secretary, or his duly authorized representative, upon a determination that such agreement is necessary or advisable in the public interest and is for the purpose of properly conserving the natural resources. Such approval will be incorporated in a certificate appended to the agreement. No such agreement will be approved unless at least one of the parties is a holder of a Federal lease embracing lands being committed to the agreement and unless the parties signatory to the agreement hold sufficient interests in the area to give effective control of operations therein.

(b) Where a duly executed agreement is submitted for Departmental approval, a minimum of six signed counterparts should be filed. The same number of counterparts should be filed for documents supplementing, modifying, or amending an agreement, including change of operator, designation of new operator, and notice of surrender, relinquishment, or termination.

(c) The address of each signatory party to the agreement should be inserted below the party's signature. Each signature should be attested by at least one witness, if not notarized. Corporate or other signatures made in a representative capacity must be accompanied by evidence of the authority of the signatories to act unless such evidence is already a matter of record in the United States Geological Survey. (The parties may execute any number of counterparts of the agreement with the same force and effect as if all parties signed the same document, or may execute a ratification or consent in a separate instrument with like force and effect.)

(d) Any modification of an approved agreement will require approval of the Secretary or his duly authorized representative under procedures similar to those cited in paragraph (a) of this section.

§ 271.9 Filing of papers and number of counterparts.

(a) All proposals and supporting papers, instruments, and documents submitted under this part should be filed with the Supervisor, unless otherwise provided in this part or otherwise instructed by the Director.

(b) Plans of development and operation, plans of further development and operation, and proposed participating areas and revisions thereof should be submitted in quadruplicate.

(c) Each application for approval of a participating area, or revision thereof, should be accompanied by three copies of a substantiating geologic and engineering report, structure contour map or maps, cross-section or other pertinent data.

(d) Other instruments or documents submitted for approval should be submitted for approval in sufficient number to permit the approving official to return at least one approved counterpart.

§ 271.10 Bonds.

In lieu of separate bonds required for each Federal lease committed to a unit agreement, the unit operator may furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Supervisor shall determine to be adequate to protect the interests of the United States. Additional bond coverage may be required whenever deemed necessary by the Supervisor. The bond must be filed with and accepted by the Bureau of Land Management before operations will be approved. A form of corporate surety bond is set forth in § 271.15. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

§ 271.11 Appeals.

Appeals may be taken in the manner provided in § 270.90 of this chapter from any decision or order issued under the regulations in this part, unless such decision or order was approved by the Secretary prior to promulgation.

§ 271.12 Form of unit agreement for unproved areas.

UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATIONS OF THE _____
UNIT AREA, COUNTY OF _____
STATE OF _____ No. _____
UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE _____ UNIT AREA
COUNTY OF _____
STATE OF _____

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UNIT AGREEMENT

COUNTY

This Agreement entered into as of the _____ day of _____, 19____, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto".

WITNESSETH: Whereas the parties hereto are the owners of working, royalty, or other geothermal resources interests in land subject to this Agreement; and

Whereas the Geothermal Steam Act of 1970 (84 Stat. 1566), hereinafter referred to as the "Act", authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any geothermal resources pool, field, or like area, or any part thereof, for the purpose of more properly conserving the natural resources thereof, whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

Whereas the parties hereto hold sufficient interest in the _____ Unit Area covering the land herein described to effectively control operations therein; and

Whereas, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operations of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

Now, therefore, in consideration of the premises and the promises herein contained, the parties hereto commit to this agreement their respective interests in the below-defined Unit Area, and agree severally among themselves as follows:

ARTICLE I—ENABLING ACT AND REGULATIONS

1.1 The Act and all valid pertinent regulations, including operating and unit plan regulations, heretofore or hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands.

1.2 As to non-Federal lands, the geothermal resources operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the laws of the State in which the non-Federal land is located, are

hereby accepted and made a part of this agreement.

ARTICLE II—DEFINITIONS

2.1 The following terms shall have the meanings here indicated:

(a) *Geothermal lease*. A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Group 3200 and, unless the context indicates otherwise, "lease" shall mean a geothermal lease.

(b) *Unit area*. The area described in Article III of this Agreement.

(c) *Unit Operator*. The person, association, partnership, corporation, or other business entity designated under this Agreement to conduct operations on Unitized Land as specified herein.

(d) *Participating area*. That part of the Unit Area which is deemed to be productive from a horizon or deposit and to which production would be allocated in the manner described in the unit agreement assuming that all lands are committed to the unit agreement.

(e) *Working interest*. The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in this Agreement, the owner of such interest is vested with the right to explore for, develop, produce and utilize such resources. The right delegated to the Unit Operator as such by this Agreement is not to be regarded as a Working Interest.

(f) *Secretary*. The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(g) *Director*. The Director of the U.S. Geological Survey.

(h) *Supervisor*. A representative of the Secretary, subject to the direction and supervisory authority of the Director, the Chief, Conservation Division, Geological Survey, and the appropriate Regional Conservation Manager, Conservation Division, Geological Survey, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part or any subordinate of such representative acting under his direction.

ARTICLE III—UNIT AREA AND EXHIBITS

3.1 The area specified on the map attached hereto marked "Exhibit A" is hereby designated and recognized as constituting the Unit Area, containing _____ acres, more or less.

The above-described Unit Area shall when practicable be expanded to include therein any additional lands or shall be contracted to exclude lands whenever such expansion or contraction is deemed to be necessary or advisable to conform with the purposes of this Agreement.

3.2 Exhibit A attached hereto and made a part hereof is a map showing the boundary of the Unit Area, the boundaries and identity of tracts and leases in said area to the extent known to the Unit Operator.

3.3 Exhibit B attached hereto and made a part hereof is a schedule showing to the extent known to the Unit Operator the acreage, percentage, and kind of ownership of geothermal resources interests in all lands in the Unit Area.

3.4 Exhibits A and B shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, or when requested by the Supervisor, and not less than five copies of the revised Exhibits shall be filed with the Supervisor.

ARTICLE IV—CONTRACTION AND EXPANSION OF UNIT AREA

4.1 Unless otherwise specified herein, the expansion and/or contraction of the Unit

Area contemplated in Article 3.1 hereof shall be effected in the following manner:

(a) Unit Operator either on demand of the Director or on its own motion and after prior concurrence by the Director, shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the Unit Area, the reasons therefore, and the proposed effective date thereof, preferably the first day of a month subsequent to the date of notice.

(b) Said notice shall be delivered to the Supervisor, and copies thereof mailed to the last known address of each Working Interest Owner, Lessee, and Lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator, together with an application in sufficient number, for approval of such expansion or contraction and with appropriate joinders.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the Supervisor, become effective as of the date prescribed in the notice thereof.

4.2 Unitized Leases, insofar as they cover any lands which are excluded from the Unit Area under any of the provisions of this Article IV may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions contained in the Act, and the lease or leases and amendments thereto, except that operations and/or production under this Unit Agreement shall not serve to maintain or continue the excluded portion of any lease.

4.3 All legal subdivisions of unitized lands (i.e., 40 acres by Governmental survey or its nearest lot or tract equivalent in instances of irregular surveys), no part of which is entitled to be within a Participating Area on the fifth anniversary of the effective date of the Initial Participating Area established under this Agreement, shall be eliminated automatically from this Agreement effective as of said fifth anniversary and such lands shall no longer be a part of the Unit Area and shall no longer be subject to this Agreement unless diligent drilling operations are in progress on an exploratory well on said fifth anniversary, in which event such lands shall not be eliminated from the Unit Area for as long as exploratory drilling operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.

4.4 An exploratory well, for the purposes of this Article IV is defined as any well, regardless of surface location, projected for completion in a zone or deposit below any zone or deposit for which a Participating Area has been established and is in effect, or any well, regardless of surface location, projected for completion at a subsurface location under Unitized Lands not entitled to be within a Participating Area.

4.5 In the event an exploratory well is completed during the four (4) months immediately preceding the fifth anniversary of the Initial Participating Area established under this Agreement, lands not entitled to be within a Participating Area shall not be eliminated from this Agreement on said fifth anniversary, provided the drilling of another exploratory well is commenced under an approved Plan of Operation within four (4) months after the completion of said well. In such event, the land not entitled to be in participation shall not be eliminated from the Unit Area so long as exploratory drilling

operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.

4.6 With prior approval of the Supervisor, a period of time in excess of four (4) months may be allowed to elapse between the completion of one well and the commencement of the next well without the automatic elimination of nonparticipating acreage.

4.7 Unitized lands proved productive by drilling operations which serve to delay automatic elimination of lands under this Article IV shall be incorporated into a Participating Area (or Areas) in the same manner as such lands would have been incorporated in such areas had such lands been proven productive during the year preceding said fifth anniversary.

4.8 In the event nonparticipating lands are retained under this Agreement after the fifth anniversary of the initial Participating Area as a result of exploratory drilling operations, all legal subdivisions of unitized land (i.e., 40 acres by Government survey or its nearest lot or tract equivalent in instances of irregular Surveys), no part of which is entitled to be within a Participating Area shall be eliminated automatically as of the 121 day, or such later date as may be established by the Supervisor, following the completion of the last well recognized as delaying such automatic elimination beyond the fifth anniversary of the initial Participating Area established under this Agreement.

ARTICLE V—UNITIZED LAND AND UNITIZED SUBSTANCES

5.1 All land committed to this Agreement shall constitute land referred to herein as "Unitized Land". All geothermal resources in and produced from any and all formations of the Unitized Land are unitized under the terms of this agreement and herein are called "Unitized Substances."

ARTICLE VI—UNIT OPERATOR

6.1 ----- is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, production, distribution and utilization of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to Unit Operator as the owner of a Working Interest when such an interest is owned by it.

ARTICLE VII—RESIGNATION OR REMOVAL OF UNIT OPERATOR

7.1 Prior to the establishment of a Participating Area, hereunder, Unit Operator shall have the right to resign. Such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator or terminate Unit Operators rights, as such, for a period of six (6) months after notice of its intention to resign has been served by Unit Operator on all Working Interest Owners and the Supervisor, nor until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor, unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

7.2 After the establishment of a Participating Area hereunder Unit Operator shall have the right to resign in the manner and subject to the limitations provided in 7.1 above.

7.3 The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of Working Interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Supervisor.

7.4 The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title, or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, material, and appurtenances used in conducting the unit operations to the new duly qualified successor Unit Operator or, if no such new unit operator is elected, to the common agent appointed to represent the Working Interest Owners in any action taken hereunder to be used for the purpose of conducting operations hereunder.

7.5 In all instances of resignation or removal, until a successor Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for performance of the duties and obligations of Unit Operator, and shall not later than 30 days before such resignation or removal becomes effective appoint a common agent to represent them in any action to be taken hereunder.

7.6 The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

ARTICLE VIII—SUCCESSOR UNIT OPERATOR

8.1 If, prior to the establishment of a Participating Area hereunder, the Unit Operator shall resign as Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on an acreage basis, in the Unitized Land.

8.2 If, after the establishment of a Participating Area hereunder, the Unit Operator shall resign as Unit Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on a participating acreage basis. Provided, that, if a majority but less than 60 percent of the Working Interest in the Participating Lands is owned by the party to this agreement, a concurring vote of one or more additional Working Interest Owners owning 10 percent or more of the Working Interest in the participating land shall be required to select a new Unit Operator.

8.3 The selection of a successor Unit Operator shall not become effective until

(a) The Unit Operator so selected shall accept in writing the duties, obligations and responsibilities of the Unit Operator, and

(b) The selection shall have been approved by the Supervisor.

8.4 If no successor Unit Operator is selected and qualified as herein provided, the Director at his election may declare this Agreement terminated.

ARTICLE IX—ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT

9.1 Costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of Working Interests; all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of Working Interests, whether one or more, separately or collectively.

9.2 Any agreement or agreements entered into between the Working Interest Owners and the Unit Operator as provided in this Article, whether one or more, are herein referred to as the "Unit Operating Agreement".

9.3 The Unit Operating Agreement shall provide the manner in which the Working Interest Owners shall be entitled to receive their respective share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other contracts, and such other rights and obligations, as between Unit Operator and the Working Interest Owners.

9.4 Neither the Unit Operating Agreement nor any amendment thereto shall be deemed either to modify any of the terms and conditions of this Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement.

9.5 In case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Agreement shall govern.

9.6 Three true copies of any Unit Operating Agreement executed pursuant to this Article IX shall be filed with the Supervisor prior to approval of this Agreement.

ARTICLE X—RIGHTS AND OBLIGATIONS OF UNIT OPERATOR

10.1 The right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting, producing, distributing or utilizing Unitized Substances are hereby delegated to and shall be exercised by the Unit Operator as provided in this Agreement in accordance with a Plan of Operations approved by the Supervisor.

10.2 Upon request by Unit Operator, acceptable evidence of title to geothermal resources interests in the Unitized Land shall be deposited with the Unit Operator, and together with this Agreement shall constitute and define the rights, privileges, and obligations of Unit Operator.

10.3 Nothing in this Agreement shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that the Unit Operator, in its capacity as Unit Operator shall exercise the rights of possession and use vested in the parties hereto only for the purposes specified in this Agreement.

10.4 The Unit Operator shall take such measures as the Supervisor deems appropriate and adequate to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

10.5 The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and the quantity and rate of production under this Agreement.

ARTICLE XI—PLAN OF OPERATION

11.1 Concurrently with the submission of this Agreement for approval, Unit Operator shall submit an acceptable Initial Plan of Operation. Said plan shall be as complete and adequate as the Supervisor may determine to be necessary for timely exploration and/or development and to insure proper protection of the environment and conservation of the natural resources of the Unit Area.

11.2 Prior to the expiration of the initial Plan of Operation, or any subsequent Plan of Operation, Unit Operator shall submit for approval of the Supervisor an acceptable subsequent Plan of Operation for the Unit Area which, when approved by the Supervisor, shall constitute the exploratory and/or development drilling and operating obligations of Unit Operators under this Agreement for the period specified therein.

11.3 Any plan of Operation submitted hereunder shall

(a) Specify the number and locations of any wells to be drilled and the proposed order and time for such drilling, and

(b) To the extent practicable, specify the operating practices regarded as necessary and advisable for proper conservation of natural resources and protection of the environment.

11.4 The Plan of Operation submitted concurrently with this Agreement for approval shall prescribe that within six (6) months after the effective date hereof, the Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor, unless on such effective date a well is being drilled conformably with the terms, hereof, and thereafter continue such drilling diligently until the ----- formation has been tested or until at a lesser depth unitized substances shall be discovered which can be produced in paying quantities (i.e., quantities sufficient to repay the costs of drilling, completing, and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impracticable, provided, however, that Unit Operator shall not in any event be required to drill said well to a depth in excess of feet.

11.5 The Initial Plan of Operation and/or subsequent Plans of Operation submitted under this article shall provide that the Unit Operator shall initiate a continuous drilling program providing for drilling of no less than one well at a time, and allowing no more than six (6) months time to elapse between completion of one well and the beginning of the next well, until a well capable of producing Unitized Substances in paying quantities is completed to the satisfaction of the Supervisor or until it is reasonably proved that the Unitized Land is incapable of producing Unitized Substances in paying quantities in the formations drilled under this Agreement.

11.6 When warranted by unforeseen circumstances, the Supervisor may grant a single extension of any or all of the critical dates for exploratory drilling operations cited in the initial or subsequent Plans of Operation. No such extension shall exceed a period of four (4) months for each well, required by the Initial Plan of Operation.

11.7 Until there is actual production of Unitized Substances, the failure of Unit Operator to timely drill any of the wells provided for in Plans of Operation required under this Article XI or to timely submit an acceptable subsequent Plan of Operations, shall, after notice of default or notice of prospective default to Unit Operator by the Supervisor and after failure of Unit Operator to remedy any actual default within a reasonable time (as determined by the Supervisor), result in automatic termination of this Agreement effective as of the date of the default, as determined by the Supervisor.

11.8 Separate Plans of Operations may be submitted for separate productive zones, subject to the approval of the Supervisor. Also subject to the approval of the Supervisor, Plans of Operation shall be modified or supplemented when necessary to meet changes in conditions or to protect the interest of all parties to this Agreement.

ARTICLE XII—PARTICIPATING AREAS

12.1 Prior to the commencement of production of Unitized Substances, the Unit Operator shall submit for approval by the Supervisor a schedule (or schedules) of all land then regarded as reasonably proved to be productive from a pool or deposit discovered or developed; all lands in said schedule (or schedules), on approval of the Supervisor, will constitute a Participating Area (or Areas) effective as of the date production commences or the effective date of this Unit Agreement, whichever is later. Said schedule (or schedules) shall also set forth the percentage of Unitized Substances to be allocated, as herein provided, to each tract in the

Participating Area (or Areas) so established and shall govern the allocation of production commencing with the effective date of the Participating Area.

12.2 A separate Participating Area shall be established for each separate pool or deposit of Unitized Substances or for any group thereof which is produced as a single pool or deposit and any two or more Participating Areas so established may be combined into one, on approval of the Supervisor. The effective date of any Participating Area established after the commencement of actual production of Unitized Substances shall be the first of the month in which is obtained the knowledge or information on which the establishment of said Participating Area is based, unless a more appropriate effective date is proposed by the Unit Operator and approved by the Supervisor.

12.3 Any Participating Area (or Areas) established under 12.1 or 12.2 above shall, subject to the approval of the Supervisor, be revised from time to time to include additional land then regarded as reasonably proved to be productive from the pool or deposit for which the Participating Area was established or to include lands necessary to unit operations, or to exclude land then regarded as reasonably proved not to be productive from the pool or deposit for which the Participating Area was established or to exclude land not necessary to unit operations and the schedule (or schedules) of allocation percentages shall be revised accordingly.

12.4 Subject to the limitation cited in 12.1 hereof, the effective date of any revision of a Participating Area established under Articles 12.1 or 12.2 shall be the first of the month in which is obtained the knowledge or information on which such revision is predicated, provided, however, that a more appropriate effective date may be used if justified by the Unit Operator and approved by the Supervisor.

12.5 No land shall be excluded from a Participating Area on account of depletion of the Unitized Substances, except that any Participating Area established under the provisions of this Article XII shall terminate automatically whenever all operations are abandoned in the pool or deposit for which the Participating Area was established.

12.6 Nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of a Participating Area.

ARTICLE XIII—ALLOCATION OF UNITIZED SUBSTANCES

13.1 All Unitized Substances produced from a Participating Area, established under this Agreement, shall be deemed to be produced equally on an acreage basis from the several tracts of Unitized Land within the Participating Area established for such production.

13.2 For the purpose of determining any benefits accruing under this Agreement, each Tract of Unitized Land shall have allocated to it such percentage of said production as the number of acres in the Tract included in the Participating Area bears to the total number of acres of Unitized Land in said Participating Area.

13.3 Allocation of production hereunder for purposes other than for settlement of the royalty obligations of the respective Working Interest Owners, shall be on the basis prescribed in the Unit Operating Agreement whether in conformity with the basis of allocation set forth above or otherwise.

13.4 The Unitized Substances produced from a Participating Area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said Participating Area.

ARTICLE XIV—RELINQUISHMENT OF LEASES

14.1 Pursuant to the provisions of the Federal leases and 43 CFR 3245.1, a lessee of record shall, subject to the provisions of the Unit Operating Agreement, have the right to relinquish any of its interests in leases committed hereto, in whole or in part; provided, that no relinquishment shall be made of interests in land within a Participating Area without the prior approval of the Director.

14.2 A Working Interest Owner may exercise the right to surrender, when such right is vested in it by any non-Federal lease, sublease, or operating agreement, provided that each party who will or might acquire the Working Interest in such lease by such surrender or by forfeiture is bound by the terms of this Agreement, and further provided that no relinquishment shall be made of such land within a Participating Area without the prior written consent of the non-Federal Lessor.

14.3 If as the result of relinquishment, surrender, or forfeiture the Working Interests become vested in the fee owner or lessor of the Unitized Substances, such owner may:

(1) Accept those Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement; or

(2) Lease the portion of such land as is included in a Participating Area established hereunder, subject to this Agreement and the Unit Operating Agreement; and provide for the independent operation of any part of such land that is not then included within a Participating Area established hereunder.

14.4 If the fee owner or lessor of the Unitized Substances does not, (1) accept the Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement, or (2) lease such lands as provided in 14.3 above within six (6) months after the relinquished, surrendered, or forfeited Working Interest becomes vested in said fee owner or lessor, the Working Interest benefits and obligations accruing to such land under this Agreement and the Unit Operating Agreement shall be shared by the owners of the remaining unitized Working Interests in accordance with their respective Working Interest ownerships, and such owners of Working Interests shall compensate the fee owner or lessor of Unitized Substances in such lands by paying sums equal to the rentals, minimum royalties, and royalties applicable to such lands under the lease or leases in effect when the Working Interests were relinquished, surrendered, or forfeited.

14.5 Subject to the provisions of 14.4 above, an appropriate accounting and settlement shall be made for all benefits accruing to or payments and expenditures made or incurred on behalf of any surrendered or forfeited Working Interest subsequent to the date of surrender or forfeiture, and payment of any moneys found to be owing by such an accounting shall be made as between the parties within thirty (30) days.

14.6 In the event no Unit Operating Agreement is in existence and a mutually acceptable agreement cannot be consummated between the proper parties, the Supervisor may prescribe such reasonable and equitable conditions of agreement as he deems warranted under the circumstances.

14.7 The exercise of any right vested in a Working Interest Owner to reassign such Working Interest to the party from whom obtained shall be subject to the same conditions as set forth in this Article XIV in regard to the exercise of a right to surrender.

ARTICLE XV—RENTALS AND MINIMUM ROYALTIES

15.1 Any unitized lease on non-Federal land containing provisions which would terminate such lease unless drilling oper-

ations are commenced upon the land covered thereby within the time therein specified or rentals are paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provisions of this Agreement, be deemed to accrue as to the portion of the lease not included within a Participating Area and become payable during the term thereof as extended by this Agreement, and until the required drillings are commenced upon the land covered thereby.

15.2 Rentals are payable on Federal leases on or before the anniversary date of each lease year; minimum royalties accrue from the anniversary date of each lease year and are payable at the end of the lease year.

15.3 Beginning with the lease year commencing on or after ----- and for each lease year thereafter, rental or minimum royalty for lands of the United States subject to this Agreement shall be made on the following basis:

(a) An advance annual rental in the amount prescribed in unitized Federal leases, in no event creditable against production royalties, shall be paid for each acre or fraction thereof which is not within a Participating Area.

(b) A minimum royalty shall be charged at the beginning of each lease year (such minimum royalty to be due as of the last day of the lease year and payable within thirty (30) days thereafter) of \$2 an acre or fraction thereof, for all Unitized Acreage within a Participating Area as of the beginning of the lease year. If there is production during the lease year the deficit, if any, between the actual royalty paid and the minimum royalty prescribed herein shall be paid.

15.4 Rental or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator.

15.5 Settlement for royalty interest shall be made by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator, on or before the last day of each month for Unitized Substances produced during the preceding calendar month.

15.6 Royalty due the United States shall be computed as provided in the operating regulations and paid in value as to all Unitized Substances on the basis of the amounts thereof allocated to unitized Federal land as provided herein at the royalty rate or rates specified in the respective Federal leases.

15.7 Nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental, minimum royalty, or royalty due under their leases.

ARTICLE XVI—OPERATIONS ON NONPARTICIPATING LAND

16.1 Any party hereto owning or controlling the Working Interest in any Unitized Land having thereon a regular well location may, with the approval of the Supervisor and at such party's sole risk, costs, and expense, drill a well to test any formation of deposit for which a Participating Area has not been established or to test any formation or deposit for which a Participating Area has been established if such location is not within said Participating Area, unless within 30 days of receipt of notice from said party of his intention to drill the well, the Unit Operator elects and commences to drill such a well in like manner as other wells are drilled by the Unit Operator under this Agreement.

16.2 If any well drilled by a Working Interest Owner other than the Unit Operator proves that the land upon which said well is situated may properly be included in a

Participating Area, such Participating Area shall be established or enlarged as provided in this Agreement and the well shall thereafter be operated by the Unit Operator in accordance with the terms of this Agreement and the Unit Operating Agreement.

ARTICLE XVII—LEASES AND CONTRACTS CONFORMED AND EXTENDED

17.1 The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or utilization of geothermal resources on lands committed to this Agreement, are hereby expressly modified and amended only to the extent necessary to make the same conform to the provisions hereof, otherwise said leases, subleases, and contracts shall remain in full force and effect.

17.2 The parties hereto consent that the Secretary shall, by his approval hereof, modify and amend the Federal leases committed hereto and the regulations in respect thereto to the extent necessary to conform said leases and regulations to the provisions of this Agreement.

17.3 The development and/or operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of any obligations for development and operation with respect to each and every separately owned tract subject to this Agreement, regardless of whether there is any development of any particular tract of the Unit Area.

17.4 Drilling and/or producing operations performed hereunder upon any tract of Unitized Lands will be accepted and deemed to be performed upon and for the benefit of each and every tract of Unitized Land.

17.5 Suspension of operations and/or production on all Unitized Lands pursuant to direction or consent of the Secretary or his duly authorized representative shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of Unitized Land. A suspension of operations and/or production limited to specified lands shall be applicable only to such lands.

17.6 Subject to the provisions of Article XV hereof and 17.10 of this Article, each lease, sublease, or contract relating to the exploration, drilling, development, or utilization of geothermal resources of lands other than those of the United States committed to this Agreement, is hereby extended beyond any such term so provided therein so that it shall be continued for and during the term of this Agreement.

17.7 Subject to the lease renewal and the readjustment provision of the Act, any Federal lease committed hereto may, as to the Unitized Lands, be continued for the term so provided therein, or as extended by law. This subsection shall not operate to extend any lease or portion thereof as to lands excluded from the Unit Area by the contraction thereof.

17.8 Each sublease or contract relating to the operations and development of Unitized Substances from lands of the United States committed to this Agreement shall be continued in force and effect for and during the term of the underlying lease.

17.9 Any Federal lease heretofore or hereafter committed to any such unit plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization.

17.10 In the absence of any specific lease provision to the contrary, any lease, other than a Federal lease, having only a portion of its land committed hereto shall be segregated as to the portion committed and the

portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. In the event any such lease provides for a lump-sum rental payment, such payment shall be prorated between the portions so segregated in proportion to the acreage of the respective tracts.

17.11 Upon termination of this Agreement, the leases covered hereby may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions of the Act, the lease or leases, and amendments thereto.

ARTICLE XVIII—EFFECTIVE DATE AND TERM

18.1 This Agreement shall become effective upon approval by the Secretary or his duly authorized representative and shall terminate five (5) years from said effective date unless,

(a) Such date of expiration is extended by the Director, or

(b) Unitized Substances are produced or utilized in commercial quantities in which event this Agreement shall continue for so long as Unitized Substances are produced or utilized in commercial quantities, or

(c) This Agreement is terminated prior to the end of said five (5) year period as heretofore provided.

18.2 This Agreement may be terminated at any time by the owners of a majority of the Working Interests, on an acreage basis, with the approval of the Supervisor. Notice of any such approval shall be given by the Unit Operator to all parties hereto.

ARTICLE XIX—APPEARANCES

19.1 Unit Operator shall, after notice to other parties affected, have the right to appear for and on behalf of any and all interests affected hereby before the Department of the Interior, and to appeal from decisions, orders or rulings issued under the regulations of said Department, or to apply for relief from any of said regulations or in any proceedings relative to operations before the Department of the Interior or any other legally constituted authority: *Provided, however,* That any interested parties shall also have the right, at its own expenses, to be heard in any such proceeding.

ARTICLE XX—NO WAIVER OF CERTAIN RIGHTS

20.1 Nothing contained in this Agreement shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense pertaining to the validity or invalidity of any law of the State wherein lands subject to this Agreement are located, or of the United States, or regulations issued thereunder, in any way affecting such party or as a waiver by any such party of any right beyond his or its authority to waive.

ARTICLE XXI—UNAVOIDABLE DELAY

21.1 The obligations imposed by this Agreement requiring Unit Operator to commence or continue drilling or to produce or utilize Unitized Substances from any of the land covered by this Agreement, shall be suspended while, but only so long as, Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, Acts of God, Federal or other applicable law, Federal or other authorized governmental agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of Unit Operator, whether similar to matters herein enumerated or not.

21.2 No unit obligation which is suspended under this section shall become due less than thirty (30) days after it has been determined that the suspension is no longer applicable.

21.3 Determination of creditable "Unavoidable Delay" time shall be made by the Unit Operator subject to approval of the Supervisor.

ARTICLE XXII—POSTPONEMENT OF OBLIGATIONS

22.1 Notwithstanding any other provisions of this Agreement, the Director, on his own initiative or upon appropriate justification by Unit Operator, may postpone any obligation established by and under this Agreement to commence or continue drilling or to operate on or produce Unitized Substances from lands covered by this Agreement when in his judgement, circumstances warrant such action.

ARTICLE XXIII—NONDISCRIMINATION

23.1 In connection with the performance of work under this Agreement, the Operator agrees to comply with all of the provisions of section 202 (1) to (7) inclusive, of Executive Order 11246 (30 F.R. 12319), as amended by Executive Order 11375 (32 F.R. 14303), which are hereby incorporated by reference in this Agreement.

ARTICLE XXIV—COUNTERPARTS

24.1 This Agreement may be executed in any number of counterparts no one of which needs to be executed by all parties, or may be ratified or consented to by separate instruments in writing specifically referring hereto, and shall be binding upon all parties who have executed such a counterpart, ratification or consent hereto, with the same force and effect as if all such parties had signed the same document.

ARTICLE XXV—SUBSEQUENT JOINDER

25.1 If the owner of any substantial interest in geothermal resources under a tract within the Unit Area fails or refuses to subscribe or consent to this Agreement, the owner of the Working Interest in that tract may withdraw said tract from this Agreement by written notice delivered to the Supervisor and the Unit Operator prior to the approval of this Agreement by the Supervisor.

25.2 Any geothermal resources interests in lands within the Unit Area not committed hereto prior to approval of this Agreement may thereafter be committed by the owner or owners thereof subscribing or consenting to this Agreement, and, if the interest is a Working Interest, by the owner of such interest also subscribing to the Unit Operating Agreement.

25.3 After operations are commenced hereunder, the right of subsequent joinder, as provided in this Article XXV, by a working interest owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the Unit Operating Agreement. Joinder to the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement, if more than one committed Working Interest Owner is involved, in order

for the interest to be regarded as committed to this Unit Agreement.

25.4 After final approval hereof, joinder by a nonworking interest owner must be consented to in writing by the Working Interest Owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such nonworking interest. A nonworking interest may not be committed to this Agreement unless the corresponding Working Interest is committed hereto.

25.5 Except as may otherwise herein be provided, subsequent joinders to this Agreement shall be effective as of the first day of the month following the filing with the Supervisor of duly executed counterparts of all or any papers necessary to establish effective commitment of any tract to this Agreement unless objection to such joinder is duly made within sixty (60) days by the Supervisor.

ARTICLE XXVI—COVENANTS RUN WITH THE LAND

26.1 The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance, of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest.

26.2 No assignment or transfer of any Working Interest or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic, or certified copy of the instrument of transfer.

ARTICLE XXVII—NOTICES

27.1 All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to the party or sent by postpaid registered or certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereto or to such other address as any such party may have furnished in writing to party sending the notice, demand or statement.

ARTICLE XXVIII—LOSS OF TITLE

28.1 In the event title to any tract of Unitized Land shall fail and the true owner cannot be induced to join in this Agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title.

28.2 In the event of a dispute as to title as to any royalty, Working Interest, or other interests subject hereto, payment or delivery

on account thereof may be withheld without liability for interest until the dispute is finally settled: *Provided, That*, as to Federal land or leases, no payments of funds due the United States shall be withheld, but such funds shall be deposited as directed by the Supervisor to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

ARTICLE XXIX—TAXES

29.1 The Working Interest Owners shall render and pay for their accounts and the accounts of the owners of nonworking interests all valid taxes on or measured by the Unitized Substances in and under or that may be produced, gathered, and sold or utilized from the land subject to this Agreement after the effective date hereof.

29.2 The Working Interest Owners on each tract may charge a proper proportion of the taxes paid under 29.1 hereof to the owners of nonworking interests in said tract, and may reduce the allocated share of each royalty owner for taxes so paid. No taxes shall be charged to the United States or the State of ----- or to any lessor who has a contract with his lessee which requires the lessee to pay such taxes.

ARTICLE XXX—RELATION OF PARTIES

30.1 It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing in this Agreement contained, expressed, or implied, nor any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

ARTICLE XXXI—SPECIAL FEDERAL LEASE STIPULATIONS AND/OR CONDITIONS

31.1 Nothing in this Agreement shall modify special lease stipulations and/or conditions applicable to lands of the United States. No modification of the conditions necessary to protect the lands or functions of lands under the jurisdiction of any Federal agency is authorized except with prior consent in writing whereby the authorizing official specifies the modification permitted.

In witness whereof, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

Witnesses:	Unit operator (as
-----	unit operator and
-----	as working interest
Witnesses:	owner)

-----	By -----
Witnesses:	Working Interest
-----	Owners:

-----	By -----
-----	Other Interest
-----	Owners:

-----	By -----

§ 271.13 Sample form of Exhibit A of unit agreement.

EXHIBIT A—BIG VAPOR UNIT AREA, T. 13 N., R. 10 W., M.D.M., California
R. 1 W.

Hot Rock	Volcanics	Fumarole
7	14	13
16		Hadde
State	C-38470	
Volcanics		Hot Rock
21	23	24
	22	C-83970
	Smith	
	Hot Volcan- Rock 1/2 1cs 1/2	Hot Rock
28	27	25
C-41345	C-41679	C-72780
	Hot Rock	Hot Rock
33	34	35
C-41679	Quick et al.	C-39123

① Means tract number as listed on Exhibit B

- ☐ PUBLIC LAND
☐ STATE LAND
☐ PATENTED LAND

§ 271.14 Sample Form of Exhibit B of unit agreement.

EXHIBIT B—BIG VAPOR UNIT AREA, NAPA COUNTY, CALIF., T. 13 N., R. 10 W.

Tract No.	Description of land	No. of acres	Serial No. and expiration date of lease	Basic royalty and ownership percentage	Lessee of record	Working Interest and percentage
Federal land						
1	Sec. 14: All.	1,890.00	California 38470 July 31, 1982	United States: All.	Volcanics, Inc.	Volcanics, Inc.: All.
	Sec. 15: All.					
	Sec. 23: Lots 1, 2, 8 1/2, NEW					
2	Sec. 35: All.	640.00	39123 July 31, 1982	do.	D. H. Boiler	Hot Rock Co.: All.
3	Sec. 21: All.	1,280.00	41845 July 31, 1982	do.	C. S. Waters—50% D. F. Mann—50%	Volcanics Co.: 50% Hot Rock Co.: 50%
4	Sec. 27: All.	1,280.00	41679	do.	H. C. Pipes	Fumarole Ltd.: All.
5	Sec. 26: All.	961.50	71278 Sept. 31, 1982	do.	Hot Rock Co.	Hot Rock Co.: All.
6	Sec. 24: All.	965.80	83970 Application.	do.	H. C. Pipes	Do.
	Sec. 25: N 1/2					
6 Federal tracts 7,017.30 acres or 68.47% of unit area.						
California State land						
7	Sec. 16: All.	1,280.60	65-67430	State of California: All.	Hot Rock Co.	Hot Rock Co.: All.
	Sec. 36: All.					
1 State tract 1,280.60 acres or 12.49% of unit area.						
Patented land						
8	Sec. 13: All.	641.20	June 30, 1979	I. B. Hadde: All.	Fumarole, Ltd.	Fumarole, Ltd.: All.
9	Sec. 22: Lots 1, 2, 3, 4, S 1/2 NW 1/4	590.00	Feb. 28, 1981	J. P. Smith: All.	do.	Do.
10	Sec. 34: All.	640.00	Mar. 31, 1981	A. G. Quick: 75% P. T. Land: 25%	Hot Rock Co.	Hot Rock Co.: All.
11	Tract 39	80.00	Apr. 30, 1981	M. V. Jones: All.	Unleased	M. V. Jones: All.
3 Patented tracts 1,951.20 acres or 19.04% of unit area.						
Total: 11 tracts 10,249.10 acres in entire unit area.						

§ 271.15 Form of collective bond.

COLLECTIVE CORPORATE SURETY

Known all men by these presents, That we, _____ signing as Principal (Name of Unit Operator)

pa., for and on behalf of the record owners of unitized substances now or hereafter covered by the unit agreement for this _____, approved _____, (Name of Unit)

_____ as Surety are (Name and address of Surety)

jointly and severally held and firmly bound unto the United States of America in the sum of _____ Dollars, (Amount of bond)

lawful money of the United States, for the use and benefit of and to be paid to the United States and any entryman or patentee of any portion of the unitized land, heretofore entered or patented with the reservation of the geothermal resources deposits to the United States, for which payment well and truly to be made, we find ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns by these presents.

The condition of the foregoing obligation is such that, whereas the Secretary on _____ approved under the provisions of the Geothermal Steam Act of 1970, a unit agreement for the development and

operation of the _____;
(Name of Unit and State)

and
Whereas said Principal and record owners of unitized substances, pursuant to said unit agreement, have entered into certain covenants and agreements as set forth therein, under which operations are to be conducted; and

Whereas said Principal as Unit Operator has assumed the duties and obligations of the respective owners of unitized substances as defined in said unit agreement; and

Whereas said Principal and surety agree to remain bound in the full amount of the bond for failure to comply with the terms of the unit agreement, and the payment of rentals, minimum royalties, and royalties due under the Federal leases committed to said unit agreement; and

Whereas the Surety hereby waives any right of notice of and agrees that this bond may remain in force and effect notwithstanding:

(a) Any additions to or change in the ownership of the unitized substances herein described.

(b) Any suspension of the drilling or producing requirements or waiver, suspension or reduction of rental or minimum royalty payments or reduction of royalties pursuant to applicable laws or regulations thereunder; and

Whereas said Principal and Surety agree to the payment of compensatory royalty under the regulations of the Interior Department in lieu of drilling necessary offset wells in the event of drainage; and

Whereas nothing herein contained shall preclude the United States from requiring an additional bond at any time when deemed necessary:

Now, therefore, if the said Principal shall faithfully comply with all of the provisions of the above-identified unit agreement and with the terms of the leases committed thereto, then the above obligation is to be of no effect; otherwise to remain in full force and virtue.

Signed, sealed, and delivered this _____ day of _____, 19____, in the presence of:

Witnesses:

(Principal)

(Surety)

§ 271.16 Form of designation of successor unit operator by working interest owners.

Designation of successor Unit Operator _____, Unit Area, County of _____ State of _____, No. _____

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and the owners of

unitized working interest, hereinafter designated as "Second Parties,"

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1970, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein _____ is designated as Unit Operator; and

Whereas said _____ has resigned as such Operator,¹ and the designation of a successor Unit Operator is now required pursuant to the terms thereof; and

Whereas First Party has been and hereby is designated by Second Parties as a Unit Operator, and said First Party desires to assume all the rights, duties, and obligations of Unit Operator under the said unit agreement.

Now, therefore, in consideration of the premises hereinbefore set forth and the promises hereinafter stated, the First Party hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of the _____ unit agreement, and the Second Parties covenant and agree that, effective upon approval of this indenture by the Supervisor, of the Geological Survey, First Party shall be granted the exclusive right and privilege of exercising any and all rights and privileges and Unit Operator, pursuant to the terms and conditions of said unit agreement; said unit agreement being hereby incorporated herein by references and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designating _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor,
U.S. Geological Survey.

§ 271.17 Form of change in unit operator by assignment.

Change in Unit Operator _____ unit Area, County of _____, State of _____, No. _____

¹ Where the designation of a successor Unit Operator is required for any reason other than resignation, such reason shall be substituted for the one stated.

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and _____ hereinafter designated as "Second Party."

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1972, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein the First Party is designated as Unit Operator; and

Whereas the First Party desires to transfer, assign, release, and quitclaim, and the Second Party desires to assume all the rights, duties, and obligations of Unit Operator under the unit agreement; and

Whereas for sufficient and valuable consideration, the receipt whereof is hereby acknowledged, the First Party has transferred, conveyed and assigned all his/its rights under certain operating agreements involving lands within the area set forth in said unit agreement unto the Second Party:

Now, therefore, in consideration of the premises hereinbefore set forth, the First Party does hereby transfer, assign, release, and quitclaim unto Second Party all of First Party's rights, duties and obligations as Unit Operator under said unit agreement; and

Second Party hereby accept this assignment and hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of said unit agreement to the full extent set forth in this assignment, effective upon approval of this indenture by the Supervisor of the Geological Survey; said unit agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designated _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor, U.S.
Geological Survey

Dated: November 22, 1972.

W. W. LYONS,
Deputy Assistant Secretary
of the Interior.

[FR Doc.72-20349 Filed 11-28-72; 8:45 am]

RESPONSE TO COMMENTS RECEIVED PERTAINING TO THE GEOTHERMAL OPERATING
REGULATIONS, 30 CFR 270, PUBLISHED IN THE FEDERAL REGISTER ON
NOVEMBER 29, 1972, AS PROPOSED RULE MAKING (37 FR 230)

General Comments:

Comment: Center for Law and Social Policy (11)

Failure to require public hearings and input in regard to leasing and environmental safeguards, compliance with local environmental standards, and delegation of authority to supervisors regarding environmental issues. Standards should be shown.

Response

Minimum standards are contained in the regulations by reference and require the operators to comply with applicable State and Federal laws and regulations. Federal standards for the protection of the environment have been established by the Environmental Protection Agency but each State has the opportunity to establish its own requirements in regard to air and water pollution. It is the intent of the Department to require compliance in accordance with existing and future standards but in certain cases more stringent requirements may be necessary to minimize effects on the environment. Therefore, it is necessary that the Supervisor be authorized to act in these cases and set specific local standards. The same criteria are applicable to all phases of geothermal operations. Consideration is given to all phases of a proposed operation and would include an analysis of exploratory operations by the Geological Survey in consultation with the appropriate surface management agency and any other agency which may have jurisdiction in the area. The approval of any operation is a cooperative function and covers both surface and subsurface considerations which require input from many agencies. The Supervisor considers all these factors and, when appropriate, will establish such requirements for conducting operations as are necessary to protect the environment and minimize environmental impact. These actions are not arbitrary actions by the Supervisor and will be accomplished through the issuance of formal Geothermal Resource Operational Orders. These provisions in the operating regulations are necessary in order for the Department to meet the legal responsibilities assigned to the Secretary of the Interior. It is the Department's intention to cooperate with State and local agencies, within the framework of existing laws and regulations, so as to further the development of the Nation's geothermal resources and utilize them to the maximum while protecting life and the environment. The requirement of mandatory public hearings on all phases of operations would be an unreasonable burden to both the lessee and the government and would be of marginal value in improving the management process.

Section 270.11 - General Functions

Comment Chevron Oil Company, Western Division (36); Colorado Geological Survey, Department of Natural Resources (37)

Consult with lessees, operators and State agencies prior to issuance of GRO Orders.

Response

This language is in Section 270.11 of the operating regulations published in the Federal Register on November 29, 1972 (Vol. 37, No. 230).

Section 270.12 - Regulation of Operations

Comment Department of Geology and Mineral Industries, State of Oregon (1)

Supervision of operations on Federal lands can be performed by State agencies. Federal regulations and inspection are an unnecessary duplication and expense.

Response

The Secretary of the Interior is responsible for all operations on Federal lands. The Department will cooperate with State and local agencies within the framework of existing laws and regulations, but the Department must fulfill its own public land management responsibilities.

Section 270.13 - Required Samples, Tests and Surveys

Comment Union Oil Company of California (43)

Modify language to include the word "practical" between the words "necessary" and "or," since it may not be practical to run certain surveys at all times.

Response

No change necessary. Surveys which are not practical to conduct should not be requested. Should this occur, the operator could appeal the Supervisor's order pursuant to Section 270.90--Appeals.

Section 270.16 - Values and Payment

Comment Western Oil and Gas Association (16); The Anschutz Corp. (17)

Consideration received by lessee should be the value. Supervisor has autocratic authority without recourse by due process of law.

Response

Value is established by Section 270.62. This section has been rewritten to better recognize contract prices and return to the lessee. Recourse to any order by the Supervisor is afforded any aggrieved party pursuant to Section 270.90--Appeals.

Section 270.33 - Drilling and Producing Obligations

Comment Chevron Oil Company, Western Division (36)

In (b) reference to 43 CFR 3234 should be "3204."

Response

The change has been made.

Section 270.34 - Plan of Operation

Comment American Thermal Resources, Inc. (13); The Resources Agency of California (22); Chevron Oil Company, Western Division (36); United States Conference of Mayors

Change wording to read "Plan of well operations." Act of over-regulation. Plan may not be reviewed and decisions cannot be made from a map. Do not set requirements which conflict or are onerous with those set by 43 CFR 3200.0-6. Should be in compliance with local requirements.

Response

No change is necessary. This section relates basically to surface management activities. The location of more than one well may not be known during the initial stage of exploratory drilling. Subsequent plans will be required if exploration or development of an area continues. The requirements contained in lease stipulations may be general in nature so it may be necessary to be more specific in a given location on the leased lands. The process for making an environmental analysis of a proposed exploratory program includes appropriate consultation with other agencies (Federal, State and local) which have a direct interest in the area of development.

Section 270.37 - Well Records

Comment Western Oil and Gas Association (16); Union Oil Company of California (43)

Provide information only if work is performed. Change filing time from 30 days to 60 or 90 days.

Response

This section provides the lessee or operator with a general guide as to what is required in the way of records for each operation. The lessee or operator should have a complete record of all operations which should be conveniently available to the Supervisor or his authorized representative. If an operation is not performed, it is assumed that no record is necessary.

It is believed that 30 days is a reasonable time in which to file the required data.

No change necessary.

Section 270.38 - Samples, Tests and Surveys

Comment Union Oil Company of California (43)

Limit to basic data not interpretive data.

Response

This section provides for tests that may be deemed necessary by the Supervisor in order to obtain specific information concerning operations. This data should not be limited to basic data as interpretations are necessary for planning of future developments or use of the geothermal resources. In order to give proper consideration to future requests to conduct operations, the Supervisor must take into consideration the interpretation the operator has placed on the basic data.

Section 270.40 - Well Control

Comment Congressman Alphonzo Bell (and 19 other Members of Congress) (4)

Replace authority of the Supervisor with detailed minimum standards in Sections 270.41, 41, 42 and 43.

Response

No change made. Each geothermal area may present different problems or conditions relative to well control, pollution, noise, land subsidence and seismic activity. Through the combination of the provisions included in these sections and Subpart 3204 of the leasing regulations, adequate provision has been made for necessary environmental stipulations and controls. It would not be practical to include detailed minimum standards in the regulations since specific standards will have to be prescribed in each lease and the related GRO Orders for each area. All states and local governments have not established requirements for all related environmental

factors. Standards still are being developed and changed. As geothermal experience is gained, there will be changes in technology, equipment, materials and systems. It, therefore, is appropriate that standards be specifically tailored to the conditions existing for each lease area.

Section 270.41 - Pollution

Comment Chevron Oil Company, Western Division (36); United States Conference of Mayors (52)

Should limit Supervisor's authority to impose more stringent requirements to unusual and unique situations. Comply with local standards.

Response

No action taken. If local standards exist, the Supervisor, as a matter of practice and administrative procedure, will take such standards into consideration. To adequately protect the environment, it is necessary that the Supervisor have the authority to require more stringent requirements for any given area if conditions so warrant.

Section 270.43 - Land Subsidence and Seismic Activity

Comment Sierra Club (25); Chevron Oil Company, Western Division (36); Union Oil Company of California (43)

Lack of specific standards and requirements. Change to require such "reasonable" action as required by the Supervisor.

Response

No action taken. Land subsidence and/or seismic action could have minor or significant impacts depending upon the location of the geothermal area, particularly as it relates to population centers, other land uses, etc. Monitoring will detect such activities and will provide the information required for determination of the corrective action to be taken. Specific standards and requirements could not be incorporated into the regulations as conditions may vary for each geothermal lease area. It, therefore, is necessary that the Supervisor have the authority to require appropriate action. Should the operator feel that the prescribed action is unreasonable, appeal can be made pursuant to Section 270.90.

Section 270.44 - Pits and Sumps

Comment United States Conference of Mayors (52)

Consider restoration in light of other environmental control programs such as sanitary landfills or disposal of sewage sludge.

Response

The pits or sumps used for geothermal operations generally will not be of sufficient size or so located as to be suitable for other uses such as landfills or disposal of sewage sludge. The primary restoration consideration is the avoidance of unacceptable adverse environmental impacts and restoration to a near natural state. If there should be other compatible uses, appropriate consideration could be given to such uses on a case-by-case basis.

Section 270.46 - Accidents

Comment Union Oil of California (43)

Needs clarification.

Response

No action taken. The regulation covers all accidents on the leased lands related to lessees activities. Reporting of accidents will be of benefit in assuring that unsafe conditions are corrected or prevented, and such information can be of value in planning and conducting safe operations.

Section 270.49 - Sales Contracts

Comment Southern California Edison Company (29)

Not clear as to what date.

Response

The regulations published November 29, 1972 clarified this discrepancy. It now reads "30 days after the effective date of the sales contract."

Section 270.62 - Value of Geothermal Production for Computing Royalties

Comment Joseph W. Aidlin (23); Chevron Oil Company of California (36); Union Oil Company of California (43)

Arms length contracts be considered. Deduction of costs for utilization of resource and transportation. No change in section. Change (b) (2) to read, "That portion of the value of the end product which is," etc. Ambiguous unless changed.

Response

270.62(b) has been rewritten to take into consideration contract prices. No change to permit deduction for utilization (see Section 5(a) of Act) or transportation allowances. We do not believe an ambiguity exists.

Section 270.71 - Application for permit to drill, redrill, deepen, or

plug-back

Comment The Anschutz Corporation (16); Union Oil Company of California (43)

Information be kept confidential. Delete (d).

Response

See section 270.77 - Public inspection of records. The structural and hydrologic data, if available, is necessary in consideration of the effects of operations on the subsurface environment during operations. No change contemplated. (Now section 270.79)

Section 270.72 - Sundry notices and reports on wells

Comment Union Oil Company of California (43); Southern California Edison Company (29)

The Supervisor should be able to grant oral approval to plug a well.

Response

Under (a) of this part, the Supervisor does have the flexibility to grant oral approval to plug wells.

Section 270.73 - Log and History of Well

Comment Union Oil Company (43)

The time for submission of data should be extended to 90 days.

Response

Past experience in oil and gas operations has indicated that 30 days is ample time to submit the required data. The information is necessary to assist the Supervisor in making decisions on production and development activities. These decisions require that the information be submitted within a 30-day period.

Section 270.74 - Monthly Report of Operations

Comment Union Oil Company of California (43)

Delete (f) since information on drilling wells is submitted when well is completed.

Response

(f) of this section covers all operations, not just drilling wells. We believe such a report is essential for the Supervisor's use in administration of the lease.

Section 270.75 - Monthly Report of Sales and Royalty

Comment Chevron Oil Company, Western Division (36)

Reference to 270.45 should be 270.50

Response

Change has been made.

Section 270.77 - Public Inspection of Records

Comments Ellis T. Hammett (27); Southern California Edison Company (29); Union Oil Company of California (43)

All records be open to the public. Keep as written. Not to require interpretive data.

Response

No changes are contemplated. This section reflects current policy regarding reports and information submitted to the Supervisor by a lessee or operator. Such information, though required by the regulations, is a part of doing business and is proprietary information until such time as the lease terminates. This is in accord with the provisions of the Public Information Section of the Administrative Procedures Act.

Interpretive data is necessary in arriving at decisions relating to future development plans.

Section 270.80 - Noncompliance with regulations or lease terms

Comment Pacific Gas and Electric Company (24)

Reinstate 30-day notice period for remedial action for violations.

Response

The section as written provides the Supervisor with authority to prevent damage to the environment and to seek compliance with the regulations in operational matters. 43 CFR 3245.3 covers the 30-day notice of action is taken to terminate a lease for noncompliance.

RESPONSE TO COMMENTS RECEIVED PERTAINING TO THE GEOTHERMAL RESOURCES
UNIT PLAN REGULATIONS, 30 CFR 271, PUBLISHED IN THE FEDERAL REGISTER
ON NOVEMBER 29, 1972, AS PROPOSED RULE MAKING (37 FR 230)

Comments that were not specific as to the particular section to which they were being directed or those which included generalized comments in connection with a particular section are being considered as general comments.

General Comments The Anschutz Corporation (17)

There should be three basic types of units: exploratory, conservational and operational, and secondary recovery.

Response

There is no restriction on the types of unit to be proposed by parties interested in unitization. The form (271.12) is a suggested form. Sec. 271.4.

Section 271.2 - Definitions

Comment The Anschutz Corporation (17)

Paragraph (g) insert after "resources," "and by products."

Response

No action necessary. The definition of "Geothermal Resources" under 270.2(g) includes byproducts.

Section 271.3 - Designation of Area

Comment Joseph W. Aidlin (23); Union Oil Company of California (43); Robert D. Conover (49)

Word "identified" misspelled.

Response

Correction made.

Section 271.8 - Approval of an executed unit or cooperative agreement

Comment The Anschutz Corporation (17)

Paragraph (b) is not clear, does it mean at least 7 parties?

Response

Counterparts refers to executed agreement and relates to the number of signed copies which are to be submitted.

Comment Texaco, Inc. (50)

Recommend addition to Section 271.8(e) as follows:

"Whenever the Federal land involved in a unit or cooperative agreement accounts for less than 50 percent of the acreage of the unitized lands, and whenever, if the field involved is fully developed, the Federal land has less than 50 percent of the estimated recoverable unitized substances, the agreement may, with the approval of the Secretary or his duly authorized representative, make portions of the Operating Regulations, Part _____ of this chapter, inapplicable to operations under the agreement with respect to Federal land."

Response

The inclusion of the language proposed by Texaco is undesirable. The question of waiving Federal regulations will depend upon several conditions only one of which might be the amount of Federal land involved. Another factor to be considered would be the location of Federal and non-Federal lands in a proposed area.

Section 271.9 - Filing of papers and counterparts

Comment Getty Oil Company (21); Western Oil and Gas Association (16)

This provision should provide that the Department will keep confidential in accordance with applicable Federal law, all interpretive information required to be submitted.

Response

Information submitted in connection with requests for designation of unit areas will not be made available to the public (Section 271.3) and the information submitted during operations will only be available after termination of the Federal leases involved.

Section 271.12 - Form of unit agreement for unproved areas

Comment Colorado Geological Survey, Department of Natural Resources (37)

Is the form mandatory? If so, should follow standard principals and participation should not be on an acreage basis.

Response

The form of unit agreement is not mandatory. See 271.3. The establishment of participating areas in exploratory type units (unproved areas) has been a standard practice since unitization first began.

Section 271.12 - Article IV - 4.3

Comment Western Oil and Gas Association (16); The Anschutz Corporation (17); Getty Oil Company (21); Joseph W. Aidlin (23); Union Oil Company of California (43); Robert D. Conover (49)

The 5-year period for the initial term of the unit is not sufficient. Supervisor should be allowed to extend the unit agreement for 5-years upon an appropriate showing by the unit operator.

Response

Sections 4.4, 4.5, and 4.6 provide adequate means for obtaining such relief as may be justified by the circumstances unique to each case. Section 4.6 was incorporated in the model form of unit agreement in anticipation that there might be unique or unanticipated circumstances which would justify a different time period between wells.

Section 271.12 - Article IV - 4.4

Comment The Anschutz Corporation (17)

Suggest exploratory be redefined to include "any separate zone or deposit."

Response

We believe the section as written is sufficient to cover any possibility of establishing new production. No change contemplated.

Section 271.12 - Article V

Comment The Anschutz Corporation (17)

Byproducts should be included.

Response

No action required. The definition of "Geothermal Resources" under 270.2(g) includes byproducts.

Section 271.12 - Article VI - 6.1

Comment Union Oil Company of California (43); Texaco, Inc. (50)

Provide for each non-operator to take his share of production in kind. Unit Operator may be compelled to construct a plant to utilize the unitized substances.

Response

In view of the nature of the resources to be developed under the proposed unit agreement, inclusion of "distribution and utilization of Unitized Substances" in the responsibilities of the unit operator seems necessary. Should an instance develop where the inclusion of such language in a specific unit agreement would be inappropriate or undesirable, adequate modification in the language of the model form of unit agreement may be authorized by the Secretary or his delegate. We believe that the text of the unit agreement must, as a practical matter, reflect the circumstances and conditions expected during actual operation.

Section 271.12 - Article VIII - 8.1, 8.2

Comment The Anschutz Corporation (17); Texaco, Inc. (50)

No provision provided for removal of unit operator in VII or VIII. Change percentage from 60 to 75 percent.

Response

7.3 provides for removal of unit operator (sec. 8.2).

The "60 percent" cited in Section 8.2 may be reduced or increased as appropriate to the circumstances of a given case.

Section 271.12, Article X (10.1)

Comment Texaco, Inc. (50); Union Oil Company (43)

Recommend the deletion of "and/or utilizing" since it may be interpreted that the Unit Operator would be compelled to construct a plant to utilize the unitized substances.

Response

References to "distributing and/or utilizing Unitized Substances" reflect the unique nature of the resources being unitized and seem to be necessary to assure that there will be a minimum of confusion regarding the duties and responsibilities of the unit operator.

Section 271.12, Article X 10.5

Comment Western Oil and Gas Association (16); Joseph W. Aidlin (23); Union Oil Company of California (43); Robert D. Conover (49); Texaco, Inc. (50)

Recommend insertion of following paragraph at the end to provide reasonable notice and hearing on behalf of Unit Operator; again to conform to Oil and Gas Unit Regulations:

"Powers in this section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than 15 days from notice."

These provisions place a tremendous amount of power in the hands of the Supervisor and Director. These provisions should be rewritten to provide that the end results shall be accomplished by the Unit Operator on the basis of reasonable management, etc., but the means of accomplishing these ends should be left in the hands of the Operator unless the Operator fails to perform its required duties. The "rate of prospecting and development" and "the quantity and rate of production" referred to in 10.5 will be covered by the terms of private and Federal geothermal leases or contracts with public utilities. This provision would give the Director the right to abrogate or override these contracts, which would be unacceptable to the utility companies and private landowners.

Response

These sections vest no new power in the Supervisor and/or Director which differs significantly from powers vested in said officials by controlling Federal lease provisions, Federal regulations and laws. These sections simply indicate the existence of such authority for the benefit of those who may not be aware of its existence. Should circumstances indicate a need for modification of the model language to meet the needs of a given situation, justified modifications which do not imply restrictions of the authority of Departmental officials may be made in the provisions of a unit agreement approved for use in the unitization of a given area. The provision Texaco suggested for addition to Section 10.5 seems unnecessary and may result in confusion should there be an apparent conflict between the unit and controlling leases and/or regulations. Should any order or decision not be in the best interests of the parties in the agreement, Article XIX - 19.1 provides for recourse.

Section 271.12 - Article XI - 11.4

Comment The Anschutz Corporation (17); Union Oil Company of California (43); Texaco, Inc. (50)

Paragraph 11.4, a blank omitted before the word "feet."

Response

The correction has been made and a blank provided.

Section 271.12 - Article XI - 11.5

Comment The Anschutz Corporation (17)

Need provisions for delays due to lack of market.

Response

This paragraph pertains to exploratory drilling prior to discovery. The lack of market is not applicable.

Section 271.12, Article XI - 11.6

Comment Union Oil Company (43)

Since the extension period that may be granted by the Supervisor is limited to one period, the Supervisor should not be confined to one four-month extension, but should be allowed to grant any reasonable extension of time.

Response

The limitation placed upon the Supervisor's authority to grant extensions is limited to extensions relating to wells required under the initial Plan of Operations. Since the timing of the drilling of wells provided for in the initial Plan of Operations may be expected to be a significant factor in the determination that unitization should be approved, it seems appropriate to incorporate limiting language in Section 11.6 to forewarn unit proponents and other parties to the unit agreement of the importance placed upon the minimum exploratory drilling obligation being assumed under the unit agreement. It seems especially important that the exploratory drilling obligations contained in the initial Plan of Operations be recognized by proponent as firm commitments which it will be expected to fulfill.

Section 271.12, Article XI - 11.7

Comment Union Oil Company (43)

This provision deals with "actual production" of unitized substances and the penalties attached thereto. Due to the nature of the geothermal industry and the long period of time between discovery, completion of power-generating facilities and "actual production," we feel that the requirement of "actual production" is too rigorous. We submit for consideration "actual production" be changed to "capable of production in paying quantities."

Response

The "actual production" envisioned in this section is the production of geothermal resources which are immediately utilized in a beneficial manner, such as through operation of a plant. Since the primary reason for the leasing of geothermal resources is to permit their utilization in a beneficial manner, it seems appropriate to tie the benefits derived from the continuance of a unit agreement to approved, diligent and responsible operations by the unit operator.

The substitution of "capable of production in paying quantities," a phrase appropriate to oil and gas operations under the Mineral Leasing Act, does not seem appropriate to operations under the Geothermal Steam Act which require utilization of the leased resources.

Section 27.1.2 - Article XII - 12.1

Comment Chevron Oil Company, Western Division (36)

Change first sentence to read "Upon completion of a well capable of producing unitized substances in paying quantities or as soon thereafter as required by the Supervisor, the Unit Operator shall"

Response

This paragraph does not prohibit the submission of participating areas as wells are completed. No change contemplated.

Section 271.12, Article XII - 12.7

Comment Texaco, Inc. (50)

Recommend addition of following paragraph as Section 12.7 to provide for possibility of subcommercial well as per Oil and Gas Unit Regulations:

"Whenever it is determined, subject to the approval of the Supervisor, that a well drilled under this agreement is not capable of production in paying quantities and inclusion of the land on which it is situated in a participating area is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be allocated to the land on which the well is located unless such land is already within the participating area established for the pool or deposit from which such production is obtained. Settlement for working interest benefits from such a well shall be made as provided in the unit operating agreement."

Response

The proposed language suggested for incorporation as a new Section 12.7 has long been used and has proved to be appropriate for use in agreements unitizing oil and gas resources under the provisions of the Mineral Leasing Act. However, the Geothermal Resources Act and the resources leased thereunder differ significantly from the Mineral Leasing Act and the mineral resources covered thereunder. In view of the aforementioned differences, the proposed language does not seem appropriate for use in agreements that would pool geothermal resources.

Section 271.12, Article XIV - 14.1, 14.2

Comment Chevron Oil Company, Western Division (36); Texaco, Inc. (50)

Delete phrase beginning with "provided" at the end of Section 14.1 and the phrase beginning with "and further provided" at the end of Section 14.2 and add the following new paragraph to each section:

"SURRENDER. Nothing in this agreement shall prohibit the exercise by any working interest owner of the right to surrender vested in such party by any lease, sublease, or operating agreement as to all or any part of the lands covered thereby, provided that each party who will or might acquire such working interest by such surrender or by forfeiture as hereafter set forth, is bound by the terms of this agreement."

This will allow the right of working interest owners to make a surrender without prior written approval of the Director and conform to the Oil and Gas Unit Regulations.

Response

It is believed that the provisions of these sections are necessary to adequately provide for effective disposition and control of relinquished or surrendered interests in lands committed to the unit agreement. The approval by the Director prior to relinquishment of interests in Federal leases seems appropriate for leased lands that fall within the participating area.

Section 271.12, Article XVI - 16.1

Comment Texaco, Inc. (50)

Change from 30 to 90 days.

Response

It is our opinion that 30 days following notice of proposed operations provide adequate time for the unit operator to determine whether or not it is willing to drill a well. We believe 90 days would be excessive and might unduly delay desirable drilling operations.

Section 271.12, Article XVII - 17.10

Comment Texaco, Inc. (50)

To conform to Oil and Gas Unit Regulations permitting two-year extension on segregated lease, add:

"Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization: Provided, however, that any such lease as to the nonunitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as geothermal resources are produced in paying quantities."

Response

The language Texaco proposes for addition to Section 17.10 is unique to the Mineral Leasing Act. Neither the Geothermal Resources Act nor the leasing regulations issued thereunder provide for the extension of segregated portions of Geothermal Resources leases which are committed only as to a divided portion to a unit agreement.

Section 271.12, Article XVIII - 18.1, 18.2

Comments Chevron Oil Company, Western Division (36); Union Oil Company of California (43); Texaco, Inc. (50)

Suggest that the following be inserted in the last line of this provision between "quantities" and "or:"

(production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of this agreement).

Section 18.1(b), Substitute "paying" quantities for "commercial" quantities. Section 18.2, substitute "75 percent" for "a majority." This clarifies these sections and ties to the Oil and Gas Unit Regulations.

Response

To include an extension of the agreement for 15 years would not be in accordance with the provisions of the Act (Section 6(d)). Section 18.1(a) permits extension of the term of the unit agreement when justified. No useful purpose would seem to be served by the incorporation of language so extending the term of a non-producing unit agreement under which a discovery has been had and a sale contract signed. In the absence of actual production, unitized leases would expire no later than 15 years after the effective dates of such leases, dates which of necessity would in most instances precede the effective date of unitization.

"Commercial quantities" is used in the Geothermal Steam Act and is defined in the Geothermal Resources operating regulations. Use of a different, undefined term such as "paying quantities" could be expected to cause confusion and does not seem necessary nor desirable.

Section 271.12, Article XXV - 25.1

Comment Union Oil Company (43)

Feel that the term "substantial interest" should be defined.

Response

No action taken. We do not feel that it would be appropriate to explicitly define "substantial interest" in the regulations as each case would have to be considered under its own unique circumstances. This could vary widely by the number of owners involved and the relative ownership of each.

Section 271.12, Article XXVIII - 28.1

Comment Texaco, Inc. (50)

To relieve Unit Operator of unreasonable responsibility as is the case in Oil and Gas Unit Regulations, add following paragraph:

"Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder."

Response

The suggested change is not considered necessary. Should future operations demonstrate a need for modification of this section, appropriate modification can be made to cope with specific needs or problems created by specific circumstances.

Section 271.12, Article XXIX - 29.2

Comment Texaco, Inc. (50)

Add the following new sentence before the sentence beginning with "No taxes . . .:"

"The working interest owners may currently retain and deduct sufficient of the unitized substances of derivative products or net proceeds thereof from the allocated share of each royalty owner to secure reimbursement for the taxes so paid."

This will also conform to Oil and Gas Unit Regulations.

Response

The suggested change is not considered necessary nor desirable. The unit agreement is not the proper vehicle for establishing responsibilities that are appropriate to lease contracts. In other words, if a lease does not permit the working interest owner to withhold production to secure reimbursement for taxes, it does not seem proper to use a unit agreement as a vehicle for creating such authority.

Section 271.12 - Article XXXI

Comment The Anschutz Corporation (17)

The word "Federal" is misspelled.

Response

Correction made.

APPENDIX C-D

Comments Received in Response to November 29, 1972,
Proposed Regulations for Geothermal Resources Leasing on
Public, Acquired and Withdrawn Lands; Revision of Proposed
Rule; and November 29, 1972, Proposed Regulations for
Geothermal Resources Operations on Public, Acquired and
Withdrawn Lands

Comments Received in Response to November 29, 1972 Proposed Regulations for Geothermal Resources Leasing on Public, Acquired and Withdrawn Lands; Revision of Proposed Rule; and November 29, 1972 Proposed Regulations for Geothermal Resources Operations on Public, Acquired and Withdrawn Lands

	<u>Pages</u>	<u>Comment No.</u>
Representative Alphonzo Bell (Dec. 21, 1972)	C-D-4	#4
Representative Alphonzo Bell (Dec. 22, 1972)	C-D-11	#5
Representative Robert L. Leggett (Dec. 20, 1972)	C-D-12	#6
Representative Wiley Mayne (Dec. 26, 1972)	C-D-13	#31
Department of the Interior		
Bureau of Land Management		
Alaska State Office (January 12, 1973)	C-D-15	#46
Colorado State Office (Dec. 29, 1972)	C-D-17	#28
State of California		
The Resources Agency of California (Oct. 27, 1972)	C-D-19	#22
State Lands Division (Dec. 21, 1972)	C-D-22	#14
State of Colorado, Colorado Geological Survey (Jan. 12, 1973)	C-D-23	#37
State of Nevada, Division of Water Resources (Dec. 29, 1972)	C-D-25	#32
State of Oregon		
Dept. of Geology & Mineral Industries (Dec. 15, 1972)	C-D-27	#1
Dept. of Geology & Mineral Industries (Dec. 21, 1972)	C-D-30	#12
American Metal Climax, Inc. (Dec. 26, 1972)	C-D-32	#15
American Petroleum Institute (Jan. 15, 1973)	C-D-33	#38
American Thermal Resources, Inc. (Dec. 27, 1972)	C-D-36	#13

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Anschutz Corp. (December 26, 1972)	C-D-39	#17
Austral Oil Company, Inc. (Jan. 11, 1973)	C-D-43	#40
Ballard-Davis Associates (December 20, 1972)	C-D-44	#2
Baumgartner Oil Company (Dec. 29, 1972)	C-D-45	#7
Burlington Northern (Dec. 27, 1972)	C-D-47	#20
Candee, Christopher R. (Dec. 14, 1972)	C-D-49	#10
Center for Law and Social Policy (Dec. 27, 1972)	C-D-50	#11
Chevron Oil Company, The California Company Division (Jan. 11, 1973)	C-D-60	#42
Chevron Oil Company, Western Division (Jan. 10, 1973)	C-D-62	#36
Eisenstat & Gottesman, P.C. (Jan. 30, 1973)	C-D-71	#53
Getty Oil Company (Dec. 27, 1972)	C-D-74	#21
Getty Oil Company (Jan. 12, 1973)	C-D-77	#33
Gray, Alex M., (Dec. 28, 1972)	C-D-81	#26
Gulf Oil Company - U.S. (Dec. 29, 1972)	C-D-85	#18
Hammett, Ellis T. (Dec. 21, 1972)	C-D-87	#27
International City Management Association (Dec. 12, 1972)	C-D-91	#48
Landstrom, Karl S. (June 5, 1973)	C-D-93	#54
Magma Power Company (December 27, 1972)	C-D-95	#23
Mobil Oil Corporation (Jan. 11, 1973)	C-D-101	#45
National Association of Counties (Dec. 12, 1972)	C-D-103	#51
National League of Cities - U.S. Conference of Mayors (Dec. 12, 1972)	C-D-104	#52
Northwest Public Association (Dec. 27, 1972)	C-D-105	#30
Pacific Energy Corporation (Dec. 22, 1972)	C-D-107	#3

	<u>Pages</u>	<u>Comment No.</u>
Pacific Gas and Electric Company (Dec. 28, 1972)	C-D-109	#24
Petro-Lewis Corporation (Jan. 24, 1973)	C-D-122	#47
Phillips Petroleum Company (Dec. 27, 1972)	C-D-123	#19
Rocky Mountain Oil and Gas Association (Jan. 12, 1973)	C-D-126	#35
Rowan, George D. (Dec. 20, 1972)	C-D-129	#9
Sierra Club (Dec. 26, 1972)	C-D-131	#25
Southern California Edison Company (Dec. 21, 1972)	C-D-132	#29
Southern California Edison Company (Dec. 27, 1972)	C-D-137	#29
Standard Oil Company of California (Jan. 11, 1973)	C-D-161	#41
Standard Oil Company of California, Western Operations, Inc. (Jan. 11, 1973)	C-D-164	#44
Standard Oil Company (Indiana) (Jan. 15, 1973)	C-D-167	#39
Texaco, Inc. (Jan. 31, 1973)	C-D-170	#50
Towne, Edward B. (Dec. 21, 1972)	C-D-175	#8
Union Oil Company (Jan. 9, 1973)	C-D-178	#43
United States Conference of Mayors (Jan. 5, 1973)	C-D-189	#52
Western Geothermal Inc. (Jan. 12, 1973)	C-D-190	#34
Western Oil and Gas Association (Dec. 27, 1972)	C-D-192	#16

ALPHONZO BELL
28TH DISTRICT
CALIFORNIA

RICHARD BLADES
ADMINISTRATIVE ASSISTANT

#4

HOME ADDRESS:
LOS ANGELES, CALIFORNIA

COMMITTEES:
SCIENCE AND ASTRONAUTICS
EDUCATION AND LABOR

Congress of the United States
House of Representatives
Washington, D.C. 20515

December 21, 1972

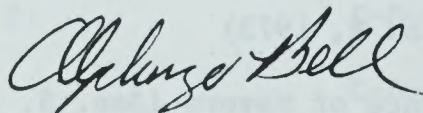
Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

It is my privilege to submit for your study the comments of eighteen Members of the House of Representatives on the Department of the Interior's proposed leasing and operating regulations to implement the Geothermal Steam Act of 1970.

Thank you very much for your consideration.

Sincerely,



Alphonzo Bell
United States Congressman

Enclosure

COMMENTS OF MEMBERS OF CONGRESS
TO THE DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY,
ON THE REVISED PROPOSED LEASING AND OPERATING REGULA-
TIONS TO IMPLEMENT THE GEOTHERMAL STEAM ACT OF 1970

December 21, 1972

We believe that the regulations proposed on November 29, 1972 by the Department of the Interior to regulate public lands leasing and operations for geothermal resources development are seriously deficient in regard to protection for the environment. The safeguards designed to limit adverse environmental effects contained in 43 CFR 3200 and 30 CFR 270 set no specific standards for environmental protection operations; delegate considerable authority to low-level officials in the field; and allow excessive discretion to officials to ignore environmental considerations.

We hope that the Department will give serious consideration to the following views before these regulations are issued in final form.

1. The United States must not repeat its past mistakes in energy development.

Geothermal energy is perhaps the first major energy source to commence large-scale development within the United States since the belated recognition in the past decade by American government, industry and citizens that adverse environmental effects represent costs to society as real as any other.

We are now engaged in paying for the mistakes made in the past. The American people are forced to pay for massive fund outlays to reverse water and air pollution. Fossil fuel exploitation practices, including strip-mining and off-shore drilling, have been forcibly

modified by statute and regulations to correct past environmental abuses which were considered acceptable and common operations when they were committed.

It is nothing short of foolhardy to permit these costly mistakes to be repeated in the development of a new energy source. Simple modifications in the proposed regulations would go far in assuring that the American people will not have to pay millions of dollars a decade from now to correct the results of abuses permitted today. More stringent regulations would also save the United States from the possibility of irreparable damage caused by seismic activity.

2. The relative cleanliness of geothermal energy must not reduce the degree of environmental protection required.

Geothermal energy has the potential to be one of the cleanest, most pollution-free sources yet developed by man. It is ironic that a relatively pollution-free source may well be exploited in a manner more detrimental to the environment than inherently more polluting sources to which strict controls are applied. The relative cleanliness of geothermal resources means only that it will be easier and less expensive for geothermal energy plants to meet stringent environmental standards; it does not mean that there is no need for such standards.

The Department of the Interior concedes, in its Draft Environmental Impact Statement for the Geothermal Leasing Program, (September, 1971), that "In any event earthquakes must be counted as a potential environmental impact associated with geothermal development...." (at p. 29, emphasis added) and that "...there is a seismic hazard due to production itself, as the rocks rearrange themselves in response to declining reservoir

pressure." (p. 39)

Other serious environmental effects of geothermal development, according to the Department, include land subsidence, whose adverse "impact can be very severe" (p. 38) and the remedy for which "can lead to the potential adverse impact of increasing seismicity." (p. 39); venting of steam to the atmosphere, which "can create an adverse environmental impact if the steam contains large amounts of noxious gases, such as hydrogen sulfide." (p. 18); blowouts, which "pose a distinct environmental hazard in geothermal drilling." (p. 17); and noise, which "can be severe." (p. 30).

Furthermore, there are effects on fish and wildlife, "not all of which are completely understood," (p. 19), though siltation would result in "damage to aquatic life" (p. 36) and other losses "would include both wildlife habitat and its use." (p. 32) Finally, the location of power plants on hiterto undeveloped federal lands, including national forests, will reduce opportunities for both recreation and enjoyment of the wilderness.

Thus, the relative cleanliness of geothermal energy does not provide grounds on which the Department of the Interior may abdicate its responsibility to regulate the many serious environmental effects associated with geothermal development. The American government must assure that the great promise which geothermal energy offers is actually fulfilled.

3. Limiting adverse environmental impact will not impede energy development.

We are aware that the basic purpose of the Geothermal Steam Act

of 1970 is to encourage the development of geothermal resources. We propose no obstruction of that goal. To the contrary, regulations protecting the environment will guarantee the greatest public and political acceptance of geothermal energy, obviate the opportunity for dilatory legal action, and permit geothermal resources to be developed to their fullest extent, thereby furthering the purpose of the Act.

As the agency charged with the administration of geothermal resources, the Department of the Interior has the responsibility to supervise the development of this energy source in the most efficient manner possible. Prevention of future remedial action and associated costs must certainly be the efficient course of action to adopt.

4. The proposed regulations do not fulfill the legislative intent of the Geothermal Steam Act of 1970.

The Geothermal Steam Act of 1970 authorizes the Secretary of the Interior to prescribe rules and regulations including provisions for (1) the prevention of waste; (2) the development and conservation of geothermal and other natural resources; (3) the protection of the public interest; and (4) the protection of water quality and other environmental qualities. [Pub. L. 91-581, sec. 24; 30 U.S.C. 1023 (a); (b); (c); (i).]

Although the statutory language is permissive and the Secretary could technically omit such provisions, once he chooses to include them he must do so in good faith, and in a sincere and thorough attempt to protect the environment, natural resources, and the public interest. Furthermore, the language of the report of the Senate's Committee on

Interior and Insular Affairs clearly mandates strong environmental protection: "The Committee has endeavored to work out a bill that will protect the public interest, including protection of the quality of the environment...." [Senate Report 91-1160 at p. 10.]

Finally, the Department of the Interior's environmental impact statement on the report on the Geothermal Steam bill, included in S. Rep. 1160, contains the following pledges:

Therefore, in the development of this resource all possible safeguards and protections for the environment will be employed.

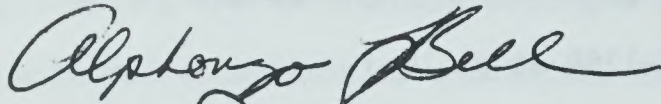
The environmental control factors to be provided in the rules and regulations will minimize any adverse effects.
[S. Rep. 91-1160 at p. 28.]

We do not believe that the proposed regulations as currently issued fulfill either these pledges or the intent of the Committee and the Congress in enacting the bill as public law.

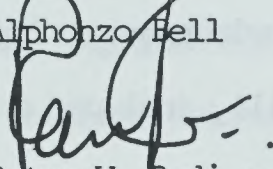
On the basis of the foregoing views we request that the Department modify its revised proposed regulations to incorporate more stringent environmental safeguards. Specifically, we suggest that: (1) the evaluation of the "potential effect of the leasing program on the total environment...." and the public hearing to aid such evaluation be made mandatory, instead of discretionary as now proposed; [43 CFR 3200.0-6 (b)] (2) the operating regulations concerning well control, pollution, noise abatement, and land subsidence and seismic activity be modified to replace the presently-proposed delegation of authority to supervisors in the field to implement vague guidelines, with detailed minimum standards for procedures and practices to protect against pollution, noise, land subsidence and seismic activity, and loss

of well control. [30 CFR 270.40 - 43.]

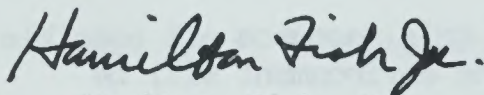
Respectfully submitted,



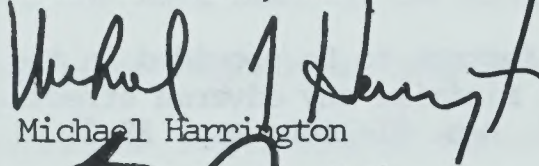
Alphonzo Bell



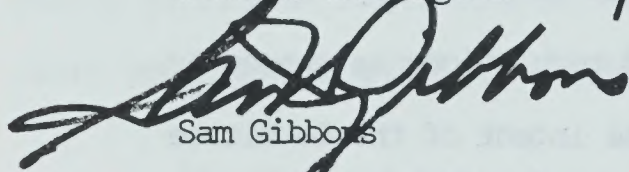
Peter W. Rodino, Jr.



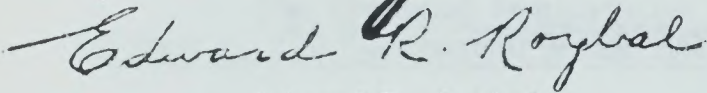
Hamilton Fish, Jr.



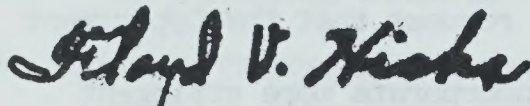
Michael Harrington



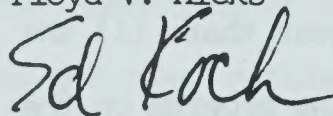
Sam Gibbons



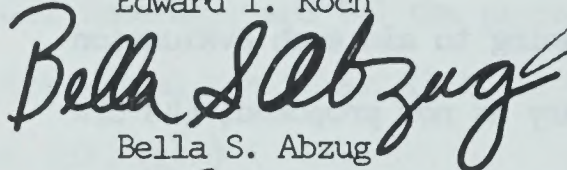
Edward R. Roybal



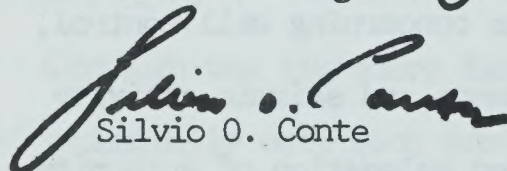
Floyd V. Hicks



Edward I. Koch



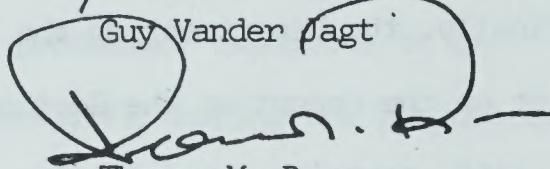
Bella S. Abzug



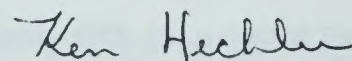
Silvio O. Conte



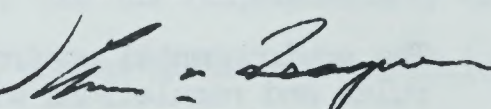
Guy Vander Jagt



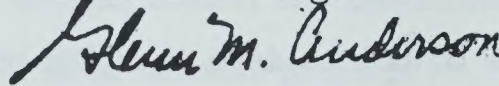
Thomas M. Rees



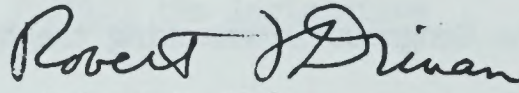
Ken Hechler



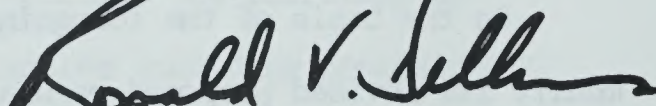
Charles M. Teague



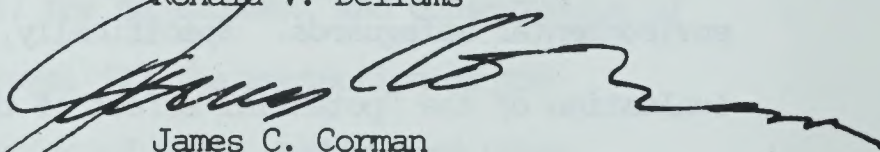
Glenn M. Anderson



Robert F. Drinan



Ronald V. Dellums



James C. Corman

ALPHONZO BELL
28TH DISTRICT,
CALIFORNIA

RICHARD BLADES
STRAIVE ASSISTANT

7/ #5

HOME ADDRESS:
LOS ANGELES, CALIFORNIA

COMMITTEES:
SCIENCE AND ASTRONAUTICS
EDUCATION AND LABOR

Congress of the United States

House of Representatives

Washington, D.C. 20515

Action Office R. Stone
For info only

December 22, 1972

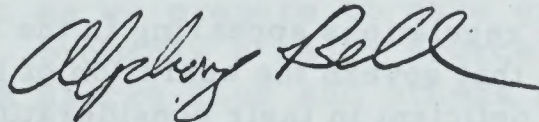
Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

I am pleased to request that you add the name of Congressman Mark Andrews of North Dakota to the comments signed by eighteen other Members of the House of Representatives on the Department of the Interior's proposed leasing and operating regulations to implement the Geothermal Steam Act of 1970.

Thank you very much.

Sincerely yours,



Alphonzo Bell
United States Congressman

AB:shl

DEPT. OF INTERIOR

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OFF OF THE SECRETARY

ROBERT L. LEGGETT, M.C.
4TH DISTRICT, CALIFORNIA

MEMBER OF
COMMITTEES ON:
ARMED SERVICES
MERCHANT MARINE AND
FISHERIES

WASHINGTON OFFICE:
Room 2263
RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, D.C. 20515
202/225-5716

OWEN CHAFFEE
ADMINISTRATIVE ASSISTANT

Congress of the United States
House of Representatives

Washington, D.C. 20515

December 20, 1972

#6

DISTRICT REPRESENTATIVE
JAMES COAKLEY
1822 TENNESSEE STREET
VALLEJO

SACRAMENTO OFFICE:
VIRGINIA HARPER
650 CAPITOL MALL

Action Office R. Stone
For info only

Honorable Rogers C. B. Morton
Secretary
Department of the Interior
Interior Building
Washington, D. C. 20240

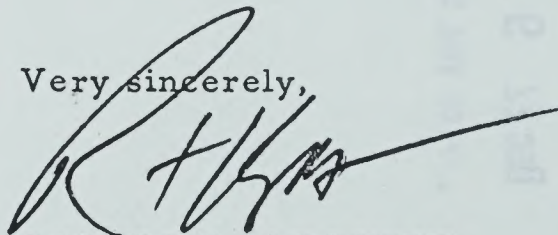
Dear Mr. Secretary:

I am excited about the tremendous potential of geothermal energy as a great source of electrical power for the U.S. and the World. At the same time, however, I am concerned that we keep a close watch on the environmental hazards inherent in the development of such an energy source.

The regulations appearing in the November 29 edition of the Federal Register, that govern the operation of geothermal resources, seem to be seriously deficient in their consideration of the possible environmental effects of geothermal development. I see no reason, for example, why the Department of the Interior should not, as a matter of policy, consider possible environmental damage before leasing lands for geothermal development.

Geothermal energy is in its infant stage. We have the opportunity to exploit this resource with little or no adverse effect on the environment. I would hope that you would take this factor into account and establish guidelines that would prevent rather than encourage damaging geothermal development.

Very sincerely,



ROBERT L. LEGGETT
Member of Congress

RLL/rj

cc: Congressman Alphonzo Bell

R. Leggett

COMMITTEE ON AGRICULTURE

SUBCOMMITTEES:

LIVESTOCK AND GRAINS
CONSERVATION AND CREDIT

Congress of the United States

House of Representatives

Washington, D.C. 20515

DISTRICT OFFICE:

P.O. Box 566

320 FEDERAL BUILDING

SIOUX CITY, IOWA 51102

PHONE: 252-4161

COMMITTEE ON THE JUDICIARY

December 26, 1972

Action Office R. Stone
For info only

The Honorable Rogers C. B. Morton
Secretary of the Interior
Department of Interior
Washington, D. C.

Dear Mr. Secretary:

The Department of Interior has issued proposed regulations to govern the leasing of geothermal resources on public lands and the operations to be conducted on these leased lands. These regulations were printed in the November 29th Federal Register.

Congressman Mayne is away in Iowa during the adjournment, but has expressed concern about the need to safeguard our environment as we prepare to make greater use of geothermal energy, probably a major source of power in the future. The Sierra Club and others have already stressed the need for stringent regulations. Congressman Mayne asked that I request that this be given your serious consideration before the regulations are made final.

Congressman Mayne believes the proposed safeguards are especially inadequate in the following passage:

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The Director, or the head of the agency charged with the administration of the surface, if he so elects, prior to the final selection of tracts for leasing, shall, when appropriate, evaluate fully the potential effect of the leasing program on the total environment..."

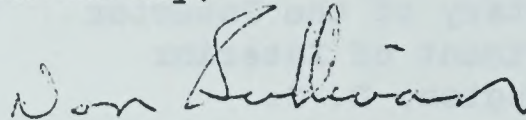
Such an evaluation should be made mandatory by deleting the words "if he so elects" and "when appropriate."

Mr. Secretary

December 26, 1972

Surely an evaluation should be required in each case. Congressman Mayne would sincerely appreciate your consideration of this strengthening amendment and other appropriate changes in the proposed regulation. Thank you for your cooperation.

Sincerely,

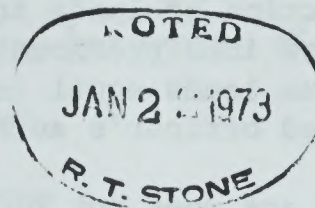


Don Sullivan
Administrative Assistant to
WILEY MAYNE, M.C.

GP/dt

UNITED STATES GOVERNMENT

Memorandum



TO : Director

#46

DATE: January 12, 1973

FROM : SD, Alaska

In reply refer to:
3200 (931)

SUBJECT: Proposed Regulations for Geothermal Resources

Your reference:
(304)

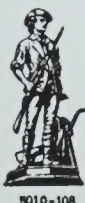
We have reviewed the proposed regulations for geothermal resources and transmit the following comments and suggestions for your consideration.

The criteria for determination of a KGRA is found only under Subpart 3200.0-5(j). We find this regulation, as now written, is complicated and difficult to untangle. We suggest the following:

§ 3200.0-5(j) "Known geothermal resource area" or "KGRA" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, cause persons experienced in the subject matter to believe that the prospects for extraction of geothermal steam or associated geothermal resources are sufficient to warrant expenditures of money for that purpose. Existence of two or more geothermal leases on Federal lands, or geothermal development on non-Federal lands, in a potential geothermal resource area within a potential geothermal resource province shall be deemed sufficient to warrant expenditures of money for that purpose, and will cause that potential resource area to become a KGRA. Absence of such leases or development shall not, however, exclude an area from determination as a KGRA. Any relevant data and information pertaining to the criteria, including without limitation any pertinent engineering and economic data, may be considered in classifying land for inclusion in a KGRA.

We find § 3202.2-3 is not complete in that it does not specify what is required of the attorney-in-fact nor the power of attorney granting his authority. We suggest this regulation be revised and expanded similar to 43 CFR 3102.6-1.

The proposed regulation § 3210.1 relating to the availability of land is rather difficult to comprehend. It would appear that when an application includes half or more of the acreage in a previous application, priority of the applications is determined by a drawing. However, the regulation does not provide for the disposition of the lands in the junior application which are not in conflict. However, it does provide



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for the rejection of lands in conflict when they cover less than half of the acreage in a previous application and the authorized officer may add contiguous lands equal in size to the rejected lands. We question the authorized officer's authority to add lands to an application.

Although the act does not provide for lease extensions by simple application therefor, provisions are made under proposed regulation § 3241 for such extensions. However, the period of extension is not designated. If such extensions are to be allowed, the length of extension should be included in the regulations.

As previously stated, the only place in the proposed regulations setting forth the criteria for determination of a KGRA is under Subpart 3200.0-5, entitled Definitions. There are no provisions made under the Geological Survey's proposed regulations, 30 CFR 270, 271, for such determinations. It, therefore, appears that such determinations will be the sole responsibility of BLM. The regulations are silent as to which agency (BLM or Geological Survey) will determine the boundaries of potential geothermal resource areas and potential geothermal resource provinces. Considering the geology and technology involved, the responsibility for these determinations should at least be shared between the two agencies. We believe the regulations should be more specific in establishing these responsibilities.



United States Department of the Interior #28

BUREAU OF LAND MANAGEMENT

5-940

COLORADO STATE OFFICE
ROOM 700, COLORADO STATE BANK BUILDING
1600 BROADWAY
DENVER, COLORADO 80202

3200

December 29, 1972

Memorandum

To: Director (380)

From: State Director, Colorado

Subject: Comments to the Revised Geothermal Leasing Proposal

The following comments are submitted to the revised regulations governing the proposed geothermal leasing program on public lands published in the Federal Register November 29, 1972. The comments are listed in numerical order of the subparts:

3045.1-1(a) has been amended to read "authorized officer" of the BLM instead of District Manager. However, 3045.2 and .3 were not changed accordingly. Why the inconsistency?

3200.0-8 Use of Surface

(a) First and second sentences used "deemed necessary", but does not specify who designates the use area.

3201.2(b) and 3202.2-1(b) - Stock ownership percentage is 20% when other leasing regulations provide for showing when ownership percentage is more than 10%. Why the inconsistency?

3203.3 - last sentence is incomplete.

3204.1 General

The wording appears to be unclear or ambiguous as to the responsibility for environmental compliance. As an example, the opening paragraph splits the responsibility assuring compliance with terms and conditions between the supervisor as to the lands in the area of operation and the appropriate land management agency as to the remaining lands in the lease, however, subpart 3204.1(c)(4) says, "The lessee shall employ such soil and resource conservation and protection measures on the leased lands as the supervisor deems necessary." The whole section is rather loosely worded as evidenced by paragraphs (e), (f), (g), (h) and (i). Phrases such as "shall use measures as are deemed necessary", "shall take into account", "shall provide for . . . in an approved manner" are generalizations which seem to imply that the lessee can use his own discretion.

3205.3-4 - Is there any requirement that applications for fractional interest must include showing as to ownership of mineral interests not owned by the United States?

3206.6 - "Unit of coverage" is not explained.

3206.8 - It appears that this provision need not be included. If it is included, it should be as a part of 3206.7 since it relates to operation of penalty provisions. The language in the oil and gas leasing regulations stemmed from Circular 1963 (F.R. of October 5, 1956) which was required when the bond forms were amended. Since the geothermal statewide and nationwide bonds will be on new current forms, don't believe this is necessary or applicable.

3204.3 and 3211.1 Readjustment of Terms and Conditions and Releasing of Formerly Leased Lands.

There is no mention of environmental reporting in either of these subsections. It seems reasonable that new terms and conditions or a new lease should be based in part on environmental analysis or at least a review of previous environmental analysis originally executed pursuant to 3200.0-6, preleasing procedures.

3242.9 - Can there be an assignment of undivided interest in a portion of a lease?

3242.7-2 - Last word - "hereof" - seems incorrect.

3242.2-2 - Regarding "qualification of corporations" - How about associations (partnerships) or other entity?

3243.3 Water wells

This paragraph doesn't seem to say what is intended. Perhaps it could read "acquire the well with casing installed at the fair market value of the casing."

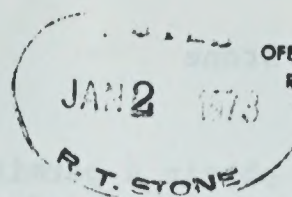
3245.1 Relinquishments

Subparts (b)(3) and (b)(4) should specify who affirms compliance as is stated in (b)(2).

James T. Leland
AETRG

NORMAN B. LIVERMORE, JR.
SECRETARY

RONALD REAGAN
GOVERNOR OF
CALIFORNIA



OFFICE OF THE SECRETARY
RESOURCES BUILDING
1416 NINTH STREET
95814

Department of Conservation
Department of Fish and Game
Department of Navigation and
Ocean Development
Department of Parks and Recreation
Department of Water Resources

Air Resources Board
Colorado River Board
San Francisco Bay Conservation and
Development Commission
State Lands Commission
State Reclamation Board
State Water Resources Control Board
Regional Water Quality Control Boards

#22

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

OCT 27 1972

Mr. Reid T. Stone
Geothermal Coordinator
United States Department
of the Interior
Room 7000
Washington, D.C. 20240

Dear Mr. Stone:

After reviewing the leasing, operating, and unit regulations published by the Department of Interior on November 29, 1972, the State of California would like to make the following comments:

General Comments

1. Nowhere in the two documents are there provisions to involve the state governments in the regulation of geothermal resources on land administered by the Federal Government except in matters concerning pollution and unit regulations. Taking into account that in some states the Federal Government controls large blocks of land and in some cases entire KGRA's, it still appears to be extremely inappropriate not to include or at least recognize the existence of state regulatory agencies (please refer to my letter of August 31, 1971, attached). For example, the Federal Government is already participating in numerous cooperative programs with the State of California concerning geothermal development. In this respect, the omission of even a minimum plan for cooperation with the states could cause needless conflict, chaos, and duplication that could eventually affect the energy consumers and taxpayers of this country.

At the very least, the regulatory standards of the Federal Government should be equal to or above state standards, and provisions should be included whereby state regulatory agencies could obtain and exchange exploration and development information gained on Federal land such as logs, well histories, surveys, and other pertinent data.

2. The general philosophy to extract as much money as possible from those bidding on Federal geothermal leases is certainly not conducive to rapid, logical, and reasonable development. As in oil and gas exploration, geothermal exploratory drilling is at best a very risky business and it follows that an operator, who has paid a high bonus

just to obtain a permit to explore on certain Federal lands, has reduced the amount of available capital for exploration. A better method of Federal leasing must be found.

In Section 3200.0-5 (J) of the leasing regulations, it declares that the "existence of a few, usually two or three geothermal leases on Federal lands, or geothermal development on other than Federal lands, in a potential geothermal resource area..." will cause that potential geothermal resource area to become a KGRA. An area should not be considered to be a KGRA until it contains wells capable of economic geothermal resources production.

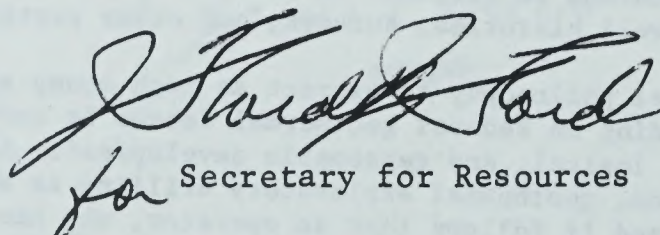
Specific Comments - Leasing Regulations

1. Under Geothermal Resources Exploration, Section 3045.0-5, a provision should be included to allow the drilling of temperature gradient wells. Temperature gradient measurements are extremely useful and are almost always a necessary part of the exploration program.
2. After developing geothermal production on Federal land, a lessee must file for a separate permit to construct a power generation plant as stated in Section 3200.0-8. Does the lessee have a guarantee that he will be able to construct generation facilities? The illumination of doubtful alternatives would certainly enhance the attractiveness of an investment in geothermal development.

Specific Comments - Operating Regulations

1. Plan of Operation, Section 270.34, is in part an example of over-regulation. For example, the requirement that an operator provide a map showing the location of mud pits, reserve pits, cooling towers, pipe racks, etc., for the drilling of each well bares little logic. Who in the Federal Government will have the time to look at each plan, and by chance if someone did, should he make a decision from a map where the pipe rack should be while there is a far more competent supervisor on the site?

Sincerely yours,


for Secretary for Resources

Attachment

AUG 31 1971

Honorable Rogers Morton, Secretary
U. S. Department of the Interior
Washington, D. C. 20240

Dear Rog:

We received your letter of August 4, 1971, and were pleased to note the proposed amendment to the geothermal leasing regulations which would provide for geophysical exploration in KGRA's without need for a lease. If adopted this amendment should make geothermal exploration much more attractive, particularly to the smaller operators.

Copies of your proposed geothermal leasing regulations have been distributed to our regulatory agencies where they will be carefully studied and evaluated. Our comments and suggestions will be forwarded to your department as soon as they are compiled.

The Resources Agency is committed to the encouragement of maximum development of this relatively nonpolluting power source and is doing everything it can to improve the regulatory climate for the geothermal industry. However, maintaining our environmental quality is also a primary consideration and to that end we would like to request that some formal mechanism be established for involving state agencies in development activities which take place on federal lands in California.

We feel that federal/state cooperation is essential to the orderly development of this urgently needed resource and we appreciate your concern for the state's position in this regard.

Sincerely yours,

Original Signed By
NORMAN B. LIVERMORE, JR.

Secretary for Resources

STATE LANDS COMMISSION

STATE LANDS DIVISION

107 SOUTH BROADWAY, ROOM 3123
LOS ANGELES, CALIFORNIA 90012

File No.: W 6325

December 21, 1972

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Gentlemen:

This is in reference to the proposed Federal regulations for the development of Geothermal Resources on public lands as published in the Federal Register on November 29, 1972.

The proposed leasing and operations regulations do not appear to conflict with the development of geothermal resources on State-owned lands under the jurisdiction of the California State Lands Commission. It is understood, however, that a Final Environmental Statement will be issued prior to promulgation of the leasing regulations. We have no further comments concerning the proposed regulations, but appreciate the opportunity for review.

Very truly yours,

A. D. WILLARD
Senior Mineral
Resources Engineer

ADW:bf

C-D-22

JOHN A. LOVE
Governor



#37

JOHN W. ROLD
Director

COLORADO GEOLOGICAL SURVEY
DEPARTMENT OF NATURAL RESOURCES
254 COLUMBINE BUILDING — 1845 SHERMAN STREET
DENVER, COLORADO 80203 PHONE 892-2611

January 12, 1973

Mr. Reid Stone, Geothermal Coordinator
U. S. Department of Interior
Interior Building
Washington, D. C. 20240

Dear Reid:

We have had a chance to review the new proposed Geothermal Resources leasing regulations and would like to comment upon them. First those regulations pertaining to the Bureau of Land Management. Paragraph 3200.0-3. The regulations state that if two or three geothermal leases exist on Federal lands, or there is a geothermal development on non Federal lands all in a potential geothermal resource area then the area may be classified as a KGRA. This regulation could hurt the development in Colorado. As there are, at the present time, no KGRAs in Colorado if a company wants to take the chance to develop a geothermal prospect in an unknown area it could very easily become a KGRA requiring much more stringent development procedures. It is our strong belief that this regulation should either be stricken or changed to make it harder to designate a non KGRA area a KGRA area.

Paragraph 3201.2 Acreage Limitations. We feel that the acreage limitation that a company or individual can hold in any one state is much too low. This should be increased upward at least 100%. In keeping with this the size of any one lease is also much too low. There is one geothermal lease of State land in Colorado for over 7,000 acres. The Federal limits should be at least 10,000 acres, if not more.

Paragraph 3203.1-4 states that if an extended lease is incapable of producing any more steam the lease may be further extended if biproducts are being produced for no more than 5 years. Why the 5 year limit? This doesn't seem reasonable. Should be as long as commercial quantities of biproducts are being produced.

Paragraph 3204.1 (2) Water pollution. Before any water is allowed to be re-injected into any aquifers State officials MUST be consulted. These are the State's waters and therefore the State should and must have the final say on reinjection

Paragraph 3240 Subparagraph 3243.3-4 State Water Laws. It is very likely that most of the geothermal development in the U. S. is going to occur in the western U. S. In most western states, the law states that the waters (ground and

Mr. Reid Stone
Page 2.
January 12, 1973

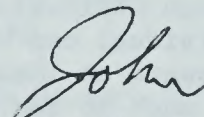
and surface) belong to the people and that one can only appropriate unappropriated water. As it can very scientifically be argued that there is direct connection between the surface waters and the waters in the geothermal reservoirs the states water laws have to be followed. This should be strongly emphasized and put forth at a much earlier stage in these regulations.

Comments pertaining to the U. S. Geological Survey. Paragraph 270.11. The requirement that the Supervisor prior to issuance of any GRO order may consult with and receive comments from State agencies is very good. These projects are going to have an impact upon the State therefore the State should have a say in them. We would recommend this feature not only here in this section but in all the sections of both regulations.

Paragraph 271.12. It is not clear if this unit Agreement form was intended as a guide or what the Agreement should actually be. If this is the required agreement form, then we feel that there are some serious shortcomings with it. Any unit that is set up should follow the principals of unitization that have been developed for the Oil and Gas industry. These are standard principals which everyone is familar with. It appears that a serious departure from these principals is being made here in setting the participation within the unit on just an acreage basis. This should and must be changed.

I hope that these regulations can soon be adopted so that we can start to get the geothermal resources developed.

Sincerely,



John W. Rold

Director and State Geologist

JWR/je

ELMO J. DeRICCO
Director

STATE OF NEVADA

#32

ROLAND D. WESTERGARD
State Engineer

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

201 South Fall Street, Carson City, Nevada 89701

In reply refer to
No.

December 29, 1972

Address All Communications to
the State Engineer, Division
of Water Resources

Geothermal Coordinator
Room 7000, U. S. Department of
the Interior
Washington, D. C. 20240

Re: Geothermal Regulations for Leasing and Operations

Gentlemen:

The regulations as proposed in the Federal Register Vol. 37, No. 230, dated November 29, 1972, contain several serious oversights. They continue to be oriented strongly toward development of geothermal steam. The regulations should encourage comprehensive development of the resource with equal consideration given to mineral by-products and water supply. The definition of Geothermal Resources includes a mention of "commercially demineralized water." It is likely that some development of geothermal resources for water supply may be undertaken by individuals for their own use, by municipalities or by other non-commercial entities. Also, there is a good possibility that some geothermal resources may not require demineralization prior to use.

The regulations should require compliance with state water laws. In Nevada, this includes licensing of well drillers by the State Engineer, complying with well drilling rules and regulations, and meeting statutory requirements in obtaining permits to appropriate surface water and ground water.

The consumptive use of water in Nevada through geothermal leases presents long range problems as Nevada depends increasingly on its limited ground water resources. The extremely long period of the proposed leases could have significant adverse impacts on water rights on adjacent public and private lands.

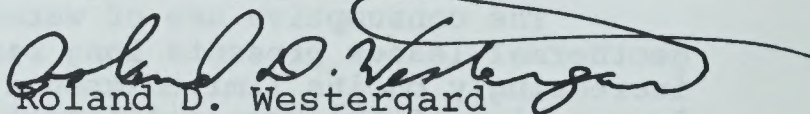
In Nevada, 14 areas have been declared critical ground water basins by the State Engineer. This has been done to protect existing water rights as legally permitted drafts on the local system reach or exceed the natural recharge to the basin. Of the 13 known geothermal resource areas which have been designated in Nevada, two (Leach Hot Springs and Fly Ranch) fall in areas previously declared critical by this office. In all, 11 of the 14 critical ground water basins contain published geothermal resources in the form of thermal springs. If the federal government issues permits which allow additional consumption of the waters in a basin already declared a critical ground water area, then it must accept responsibility for damage to owners of existing water rights due to lowering of pumping levels, land subsidence, etc. Most hot springs in Nevada are sources of valid water rights. How does the federal government propose to protect these rights in the issuance of leases for geothermal exploration?

The long terms of the proposed leases would allow a lessee to gain complete use of a geothermal resource for many years by only producing a small amount of steam. At the same time, he could be wasting or not using other valuable resources such as heat, hot water or brine, and minerals. The re-orientation of these regulations toward multiple purpose development is essential for the best utilization of a limited resource.

These comments outline some of the major objections which we have to the regulations. We feel they raise significant questions and respectfully request that they be answered before the regulations are adopted.

Nevada has a great potential for geothermal development and we are in full agreement with the overall concept of these regulations. If we can be of further assistance or provide additional information, please let us know.

Very truly yours,


Roland D. Westergard
State Engineer

RDW:gs

cc: Senator Alan Bible

Senator Howard Cannon

Congressman David Towell

E. I. Rowland, State Director, Bureau of Land Management

Dr. Arthur Baker, Dean, Mackay School of Mines, University of Nevada



DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

ADMINISTRATIVE OFFICE

1069 STATE OFFICE BLDG. • PORTLAND, OREGON • 97201 • Ph. (503) 229-5580

December 15, 1972

TOM McCALL
GOVERNOR

Geothermal Coordinator
Room 7000
U.S. Department of Interior
Washington, D.C. 20240

Dear Sir:

Enclosed are our comments on the proposed geothermal leasing regulations. It is particularly disconcerting to see how each new set of proposed regulations adds more barriers and costs to the development of geothermal resources.

The spirit of these regulations is in conflict with the intent of Congress, which over two years ago passed the law to allow the leasing of geothermal resources on public lands. Congress specifically charged the Interior Department to encourage and promote the development of this needed energy resource, realizing that far more benefit would come through development than through the maximizing of revenues from lease bonuses, rents, and royalties, as seems to be the intent of these regulations.

The definition of known geothermal resource areas as published in these regulations is circumventing the intent of Congress by greatly increasing the areas for competitive leasing and thereby limiting the areas available for non-competitive leasing.

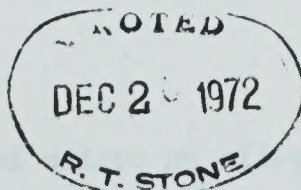
The effect of these regulations will cause more delay in the development of geothermal power while our reserves of other energy sources continue to decline at an accelerating rate.

Sincerely yours,

R.G. Bowen

R. G. Bowen
Economic Geologist

RGB:lk
Encl.



C-D-27

COMMENTS ON REGULATIONS PROPOSED TO ALLOW
LEASING OF GEOTHERMAL RESOURCES ON PUBLIC LANDS

Subpart 3200.0-5 (j) Known Geothermal Resource Area

This part, which allows an administrator to designate an area as having "known" geothermal resources because more than one person files for a non-competitive lease on the same piece of land, is in conflict with Part 3210.3 (Determination of Priorities), which says that when multiple applications are received the same day for the same non-competitive lands, the lease will be awarded by public drawing.

The administrator will have to make a decision on which action is to be taken, but the pressure will always be to declare a KGRA requiring competitive bidding at a later date.

This procedure of declaring mineral as "known" merely because of competitive interest is a departure from the practices for leasing other minerals. In the case of oil and gas or coal, leasing is on a non-competitive basis unless the resource is known to be present because of nearby production or is proven by drilling.

The classification of KGRA should be limited to those areas presently defined, and any new areas coming under this classification should be limited to areas that are known to contain geothermal fluids or rocks at temperatures and depths sufficient for commercial exploitation.

Subpart 270.12 Regulation of Operations

The regulation of drilling and abandonment of wells on public lands can best be done by state or local personnel who are nearer the operations and

are more familiar with local problems and priorities. If a state agency is already set up with experienced personnel and has existing regulations that protect the environment and the resource, they should be utilized to inspect the drilling and production activities.

The imposition of federal regulations and inspections is an unnecessary duplication and expense.

R. G. Bowen
Economic Geologist
State of Oregon
Department of Geology
and Mineral Industries

#12



DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES

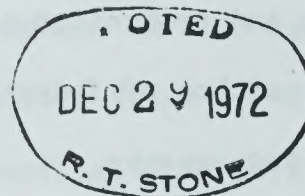
ADMINISTRATIVE OFFICE

1069 STATE OFFICE BLDG. • PORTLAND, OREGON • 97201 • Ph. (503) 229-5580

TOM McCALL
GOVERNOR

December 21, 1972

Geothermal Coordinator
Room 700
U. S. Department of Interior
Washington, D. C. 20240



Dear Sir:

It has been two years since President Nixon signed the law authorizing the exploration and development of geothermal resources on public lands. No permits have yet been granted and it appears from the terms spelled out in the recently published regulations by the U. S. Department of Interior that the requirements are so onerous as to make it very doubtful that there will be any geothermal exploration on Federal lands.

When Congress passed the law to allow geothermal developments on public lands, it was their stated intention that this use should be encouraged and that more public benefit could come of utilization of the energy than from the revenue derived from lease and royalty fees. The regulations as recently published are more concerned about maximizing the revenue to the Federal government than in developing the industry. Several restrictions and extra burdens are placed on the explorers for geothermal resources that are not required on leases for uranium, oil and gas, or coal. These tactics invariably add to the cost and delay the development, particularly when the industry is in its infancy and has not yet shown to be very profitable.

Some specific examples of restrictions placed on the exploration for geothermal resources that are not applied to other energy sources are acreage restrictions. For example, a total of 246,080 acres is the maximum amount of Federal lands that may be leased for oil and gas exploration by an individual company in each state. The limitation for geothermal leases is 20,480 acres, or 1/12th that allowed for oil and gas. There are no restrictions on the amount of land that may be held for uranium exploration.

Rental fees are \$1.00 an acre per year for geothermal leases and 50¢ an acre for oil and gas leases. Lease fees escalate after a 5-year period for geothermal leases but remain constant for oil and gas leases.

December 21, 1972

Perhaps the clause that will cause the most serious delays is in the definition of "known geothermal resource areas" (KGRA). This is important because in the known geothermal resource area, lands can only be leased by competitive bidding. This is common practice in leasing for other minerals, but for oil and gas, as an example, to be a "known" field the presence of oil and gas has been determined by commercial production, or a geologic structure near known oil and gas accumulations. For the purpose of geothermal leasing, a KGRA is defined as an area where competitive interest leads people to believe the land may be underlain by geothermal resources, and competitive interest is further defined as two or more leases being filed on a given piece of acreage.

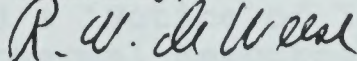
Thus, if two or more persons filed on a given piece of land, it would be withdrawn and at a later date placed for competitive bidding paying a bonus for the acreage sought. On oil and gas leases, if two or more persons filed on a non-competitive lease, a public drawing is held and the winner gets the lease, thus simplifying and greatly speeding up the process.

These extra requirements combine to delay and increase the cost of geothermal exploration, and unfortunately this has been going on for eleven years, since 1961, when the Solicitor of the Interior Department ruled that exploration for geothermal resources would not be allowed on Federal lands.

In 1961 we seemed to have unlimited other energy resources, so possibly at that time withdrawal could not be considered to have much national importance. However, today there is more awareness that energy resources are finite, and a diligent search is going on for energy sources through the expenditures of billions of dollars of public funds. And serious consideration is being given to subsidizing exploration in foreign countries. At this same time, delay after delay is placed on the availability of land for geothermal exploration.

Many experts believe that geothermal resources could supply a major amount of energy in the western states with much less environmental impact and at a lower cost than nuclear or fossil fuel thermal plants. But unless developers have land available on which to drill the wells and build the power plants geothermal power will never be developed to any importance. This is particularly the case in Oregon where over 50% of the State is owned by the Federal Government, but in the areas with geothermal potential over 75% is Federally owned. Another example is Nevada where 85% of the land is Federally owned. The denial of access to this land for too long has been a great folly and of harm to the people. Unless these regulations are modified to encourage development, rather than charge all the traffic will bear, any significant development will be delayed for several more years.

Sincerely,



R. W. deWeese, Chairman
Governing Board

RWD:bj

AMAX

15

AMERICAN METAL CLIMAX, INC.

4704 HARLAN STREET
DENVER, COLORADO 80212

December 26, 1972

LAW DEPARTMENT
WESTERN AREA

303-433-6151
TELEX 45-556

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

RE: 37 Federal Register 25281 to 25313.

Dear Sir:

AMAX has the following remarks concerning the above noted proposed rules for geothermal resources.

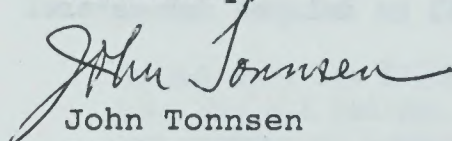
The provisions of 30 USCA Section 525 provide that mining claims and mill sites may be located under the mining laws on lands of the United States which at the time of location are included in a lease issued under the mineral leasing laws, are covered by an offer to lease filed under the mineral leasing laws or are known to be valuable for minerals subject to disposition under the mineral leasing laws to the same extent as if such lands were not so included or covered or known.

The proposed rules, specifically Sections 3203.1-5 (b) and 3230.1-4, do not assure that the rights set forth in 30 USCA Section 525 will be preserved in the regulations. For example, pursuant to Section 3203.1-5 (b) a lessee under a geothermal lease may later locate under the mining laws and thereby convert a geothermal lease to a mining claim. The provisions of 30 USCA Section 525 would indicate that the intervening mining claim locator should have preference over the geothermal lessee.

We ask that you consider the proposed geothermal lease rules from the standpoint of the mining claim locator who is not interested in geothermal leasing. The geothermal leases and unit operations pursuant to Part 271 contemplate that wide areas of land will be involved. For this reason it is important that the rights of a mining claim locator be recognized as superior to those of a geothermal lessee.

Thank you for your consideration of our remarks.

Sincerely,


John Tonnsen
Attorney

C-D-32

AMERICAN PETROLEUM

1801 K STREET, NORTHWEST

INSTITUTE

WASHINGTON, D.C. 20006

(202) 833-5580

Frank N. Ikard
PRESIDENT

January 15, 1973

Mr. Reid Stone
Geothermal Coordinator
U.S. Department of the Interior
Washington, D. C. 20240

Dear Sir:

The American Petroleum Institute is a voluntary non-profit organization representative of the petroleum industry throughout the United States. Current membership approximates 8,000 individuals and 350 companies. Members are engaged in all facets of the petroleum industry, including exploration, production, transportation, refining and marketing of petroleum and its products. The views expressed below were developed by the Committee on Exploration of the American Petroleum Institute.

We are concerned about several of the proposed revisions to rules governing leasing on public lands published in the Federal Register dated November 29, 1972, Volume 37, Number 230, Part II, "Geothermal Resources," and would like to comment as follows:

"Section 3045.1-1 Application.

(a) Forms and where filed. Any person desiring to conduct oil and gas or geothermal resources exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file for approval with the authorized officer of the Bureau of Land Management for the district in which the public lands are located a 'Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations' on a form approved by the Director."

The present wording of this section of the rule dealing only with oil and gas exploration is as follows:

"(a) Forms and where filed. Any person desiring to conduct oil and gas exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file with the District Manager of the Bureau of Land Management for the district in which the public lands are located a 'Notice of Intent to Conduct Oil and Gas Exploration Operations on a form approved by the Director'."

While the terms of the requirements to be met by the operators are not onerous, the new requirement that the Notice be approved by a BLM official presupposes possible disapproval by him. It does not seem in the public interest in this time of impending energy shortage to discourage exploration for energy materials on the public domain, especially geothermal steam which is an "environmentally clean" resource. With this approval, or disapproval, authority the authorized local official of the Bureau of Land Management could be placed under considerable pressure to deny a "permit" regardless of its merit. In any event, delays could be encountered in such a procedure even if the "permit" were ultimately granted. Because of weather conditions in many parts of the public domain, especially in Alaska, time is of the essence. In addition, delays are expensive under any conditions. However, if it is decided that the regulation must be approved in its present form, then we request additional time in which to file further comments on this proposed section.

We think that Section 3045.1-1(b) requiring disclosure "of the person, association or corporation for whom the operation will be conducted ..." should be changed and this information kept confidential and that the "Intent" form should so indicate. The reason for this request is that the oil business is an extremely competitive business and such information in the hands of the general public would negate the advantage that an astute operator would have if he were the first, or at least an early, operator in such an area. Information as to where an individual operator or company is working is a proprietary matter and as such should not be a matter of public information. We would suggest the following wording:

"Section 3045.1-1(b) The name and address, including zip code, of the person who will be in charge of the actual exploration activities. The name and address, including zip code, of the person, association or corporation for whom the operations will be conducted will be furnished on request on a confidential basis to the authorized officer of the Bureau of Land Management for the district in which the public lands affected are located."

We are concerned also about Section 3200.0-5, Definitions, subsection (j), in which "known geothermal resource area" is defined. The wording to which we object is the following:

"... Existence of a few, usually two or three, geothermal leases on Federal lands, or geothermal development on other than Federal lands, in a potential geothermal resource area within a geothermal resource province shall be deemed to be such a situation as to engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal resources in that area are good enough to warrant expenditures of money for that purpose and will cause that potential geothermal resource area to become a KGRA. Absence of such leases or development shall not, however, exclude an area from determination as a KGRA."

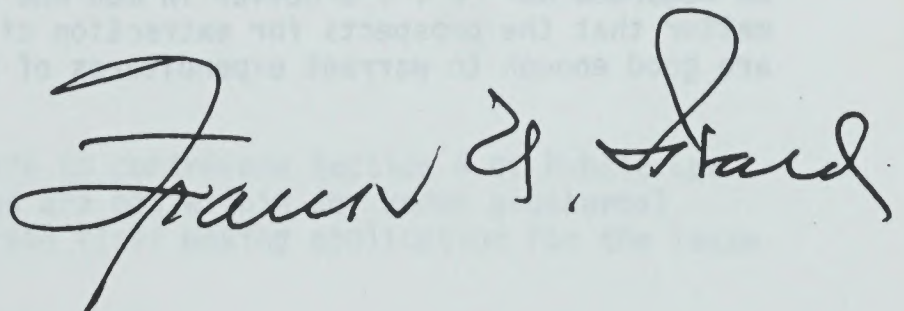
We feel that this wording is an open invitation to speculators to come and file on a prospect anywhere within a geothermal province whether or not it has merit and thus be in a position to hold up legitimate development by operators who are in a position both technically and financially to conduct such operations.

Delineation of a KGRA on such a flimsy basis as outlined above is a dubious undertaking at best. Determination of the limits of a geothermal area is difficult enough even with a great deal of preliminary exploration and drilling, frequently at considerable expense to the operator. Therefore, premature delineation of a KGRA would tend to discourage the development of such resources because of the higher costs of exploration. To discourage any energy development at this time of impending shortage, we repeat, does not appear to be in the public interest.

It is essential to allow exploration and perhaps even exploratory drilling before the determination of what area is to be included in a KGRA. After the information is available, then the area can be delineated and the leases put up for bid.

In summary, it is our recommendation that the latter part of this subsection, as quoted above, be deleted allowing the first part of the paragraph to stand as written.

Sincerely yours,

A handwritten signature in dark ink, reading "Frank G. Stand". The signature is fluid and cursive, with a large loop at the end of the last name.

STOCKDALE PROFESSIONAL BUILDING
5405 STOCKDALE HIGHWAY, SUITE 205
BAKERSFIELD, CALIFORNIA 93309
(805) 833-1420

December 27, 1972

AIR MAIL

Mr. Reid T. Stone
Geothermal Coordinator
Room 7000
U. S. Department of the Interior
Washington, D. C. 20240

Dear Mr. Stone:

Our following comments pertain to the proposed geothermal leasing and operating regulations as published in the Federal Register on November 29, 1972.

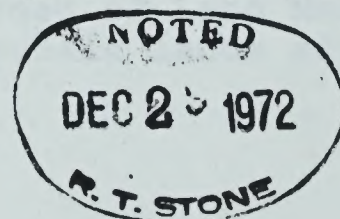
Proposed Leasing Regulations

Section 3045.0-5 (a)

This section would favor petroleum exploration and restrict geothermal exploration. Shallow drilling to unspecified depths and downhole explosive charges of unregulated strength are allowed for seismic exploration (probably for petroleum targets) on unleased public lands. Accordingly we believe the BLM should allow shallow drilling for temperature and geothermal gradient measurements and rock sampling for thermal conductivity determinations.

Section 3200.0-5 (j)

This section interprets competitive interest to include the existence of two or three geothermal leases on federal lands within a potential geothermal resource area and thereby cause the potential geothermal resource area to be classified as KGRA. We believe that since Section 3202.1 allows any citizen of the United States to hold leases without regard for the lessee's knowledge, experience or ability to explore for or develop geothermal resources, that the act of holding leases by such lessee's could not be regarded as " . . . a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal resources in that area are good enough to warrant expenditures of money for that purpose . . . "



We believe that competitive interest is demonstrated when two or more individuals, or companies who have the knowledge and ability to actively explore for geothermal resources, acquire leases in a potential geothermal resources area and actively explore for geothermal resources. We believe this section should be redrafted to allow for such differences between lessee's and that KGRA's should not be created unless the lessee's have the knowledge and ability to explore and develop geothermal resources.

Sections 3203.1-3 and 3203.1-4

These sections provide that only if geothermal steam is produced in commercial quantities will the lease be qualified to be held by production. Since it is possible that commercial quantities of hot water or hot brine could be produced and utilized for generation of electricity by use of a binary fluid heat exchange process, we believe these sections should be enlarged to provide for commercial quantities of all geothermal resources which can commercially be utilized.

Section 3203.5

This section would require submittal of the results of diligent exploration operations to the Supervisor. We think it should specifically provide that "All submitted results shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect." The foregoing sentence would best follow the words "upon his request." We also believe Geothermal Resources Operational Orders should be defined.

Section 3210.1 (c)

We believe that the portion of this section giving an authorized officer the right to add lands to an application because of deletions of lands covered by a prior application should not be allowed unless the applicant agrees with the addition of such lands.

Section 3210.2-1 (d) (1)

We recommend this wording "proposed well locations if known."
It seems premature to call for well locations on a lease application especially in view of the provisions of 30 CFR Section 270.34 as proposed.

Section 3210.4

The last sentence appears to contravene Section 4 of Public Law 91-581, "If the lands to be leased are not within any known geothermal resources area, the qualified person first making application for the lease

shall be entitled to a lease of such lands without competitive bidding. We see no basis in this language for an authorized officer to reject an application for non-competitive geothermal lease if the provisions of 43 CFR Subpart 3202 and Section 3210.2-1 as proposed are met. We believe the last sentence should be removed or be immediately followed by a statement of the appeal recourse available to the applicant.

Section 3242.1-1

The limitation of 640 acres being in the assigned or retained portion of a lease is impractical. A forty or eighty acre minimum appears more practical as these would more nearly coincide with drilling and spacing units.

Appeals

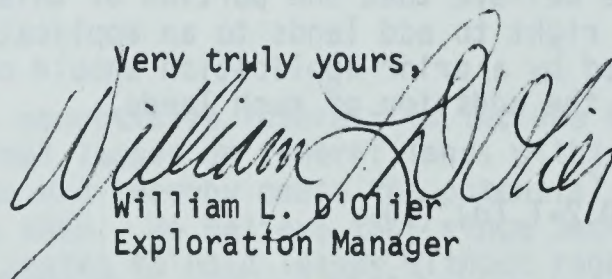
We believe that an appeals procedure should be included in the leasing regulations as there are several sections which allow the authorized officers to act arbitrarily without providing that the lessee or applicant with a clearly defined course of appeal to such a decision.

Proposed Operating Regulations

Section 270.34

We recommend a more specific heading, "Plan of well operations" and a first sentence reading "Prior to commencing any well operations on the lease." This will distinguish this plan from the applicants' "exploration plan" of Section 3210.21 and the lessee's "diligent exploration operations" of Section 3203.5.

Very truly yours,



William L. D'Olier
Exploration Manager

WLD:mg



1110 DENVER CLUB BUILDING
518 SEVENTEENTH STREET
DENVER, COLORADO 80202
TELEPHONE 303-573-5665

#17
JAN 3 1973
R. T. STONE

December 26, 1972

Mr. Reid Stone
Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Re: Review of Proposed Rules and
Regulations of Geothermal Energy

Dear Sir:

The following is a listing of my comments on the "Revision of Proposed Rule", Parts II and III, published in the Federal Register November 29, 1972.

A. Leasing on Public Acquired and Withdrawn Lands; Revision of Proposed Rule.

1. Paragraph 3045.0 - 6 & 7 left out.
Cross ref. to 43cFR 3104.9 and 3104.15 left out.
2. Paragraph 322.0-5(j) "Known geothermal resource area."
Should be based on production only the same as oil and gas.
The existing criteria is: difficult to administer, arbitrary, and will result in essentially all federal leases becoming KGRA as soon as they are applied for. If one is lucky enough to obtain a federal lease that isn't classified KGRA, it appears that it will be so classified shortly after any encouraging exploration work is done and reported or a drilling permit is applied for.
3. Paragraph 3201.1-6 "Excepted Areas."
These lands should be leaseable with restrictions.
4. Paragraph 3201.2 "Acreage Limitations."
Subparagraph (b) "Parties owning a royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with a similar percentage of the total lease acreage."

This results in a chargeability in excess of 100% per acre. If chargeability is to be based on production rather than working interest, then the working interest should be charged only with its net revenue interest. The basic royalty and subsequent overriding royalties should be deducted from the chargeability of the working interest owner.

5. Paragraph 3203.1-5 "Conversion to mineral leases or mining claims."

Subparagraph (c). This section needs added protection similar to Paragraph 3201.1-2 subparagraph (b) i.e., "Should the head of the agency object to the leasing of such withdrawn lands, the lands shall not be leased unless the Assistant Secretary for Public Land Management approves the offering after consultation with the appropriate Assistant Secretary or his representative."

6. Paragraph 32.5 "Diligent exploration".

We need a provision that this supplied information may be kept confidential at the operator's written request.

7. Paragraph 3205.2 "Service Charges", and
Paragraph 3205.3 "Rentals & Royalties".

The increase of service fees from \$10 to \$50 and rentals from \$0.50 to \$1.00 is inflationary and an undue burden on the small operators.

8. Paragraph 3244.4-3 "Acreage chargeability".

- a) The acreage limitation of 20,480 acres (Par. 3201.2) in any one state is inadequate. The limitation should be 246,080 acres. Evidence already available would indicate that several KGRA's will more than double the 20,480 acre size. It then becomes very important to know when acreage committed to a unit ceases to be chargeable. This needs to be clearly spelled out.
- b) I would suggest that the acreage cease to be chargeable upon preliminary approval by the Secretary of Interior or his approved representative.
- c) With the advent of environmental impact statements etc. final approval of a unit may be delayed months or even years.
- d) It is in the best interests of the public and nation that an aggressive explorer not be delayed by chargeability problems caused by small acreage limitations and cumbersome approval procedures.
- e) If final approval is refused, the operator should have at least one year to adjust his chargeability to the proper amount.

B. Geothermal Resources Operations on Public, Acquired and Withdrawn Lands.

1. Paragraph 270.16 "Values and payment for losses."

This section gives the supervisor autocratic authority with no recourse through due process of law.

2. Paragraph 270.62(a)(1) If this in fact is to be the "reasonable

value", subparagraph (1) should read "The average (instead of highest) price paid etc."

3. Paragraph 270.71 (d) There needs to be a provision that information supplied under this subparagraph be kept confidential.
4. Paragraph 271.2 "Definitions" subparagraph (g) should read "Deposits of geothermal resources and byproducts recovered etc."
5. Paragraph 271.8(b) This paragraph is not clear. It appears that you must have at least 7 parties or "counterparts" in a federal unit. Why isn't one enough?

C. Form of Unit Agreement

1. Paragraph 271.12 "Form of Unit Agreement for unproved areas"
Art. IV - Contraction and Expansion of Unit Area
2. Paragraph 4.3 If I read this right, leases that have been in a unit for five years become continuous development leases or are excluded from the unit. Elsewhere I see no provisions for minimum shut-in royalty. These rules and regulations are written with the assumption that there will be an immediate market for the geothermal energy produced. Even now, with our energy crunch, this is not true. Developing a market is as difficult as finding the natural resource. The initial exploratory test and a few step-out wells to establish reserves can be drilled, but infill development wells cannot be drilled until a market is assured.
3. Paragraph 4.4 This limits the definition of an "exploratory well" only to one projected "below any zone or deposit for which a Participating Area has been established and is in effect." In fact we may be exploring any separate traps, be they shallower, the same depth, deeper, structural, or stratigraphic. The following wording is suggested:

"An exploratory well, for the purposes of this Article IV is defined as any well, regardless of surface location, projected for completion in any separate zone or deposit for which a Participating Area has been established etc."

4. Art. V - Unitized Land and Unitized Substances by-products should be included.
5. Art. VI
 - a) Paragraph 7.3 states "be subject to removal by the same percentage vote of the owners of working interests as herein provided for the selection of a new Unit Operator." Article VIII Paragraph 8.1 states "or shall be removed as provided in Article VII." There is no criteria or method provided in Art. VII, Art. VIII or the body of the text for the removal of a Unit Operator.

6. Art. XI "Plan of Operation"

Paragraph 11.4 at the end of the paragraph: Shouldn't this read "in excess of _____ feet." ?

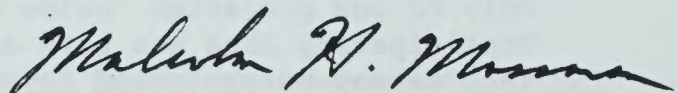
Paragraph 11.5: Here again we need a provision for delays due to lack of market.

7. Art. XXXI "Special Federal Lease". The word Federal is misspelled.

8. There should be three basic types of units:

- a) Exploratory units in which ownership and participation is based upon a per acre basis.
- b) Conservation and Operational units in which prior to secondary recovery, proceeds can be distributed from a formula based on geological and engineering data. This would provide for, among other things, an early and timely development and operational plan for reservoir protection in the best interests of the operators and the nation.
- c) A secondary recovery unit in which proceeds can be distributed from a formula based on geological and engineering data.

Sincerely yours,



Malcolm H. Mossman

MM/ds

AUSTRAL OIL COMPANY
INCORPORATED

40

(713) 228-9461
cable-AUSTROIL

2700 Humble Building

Houston, Texas 77002

January 11, 1973

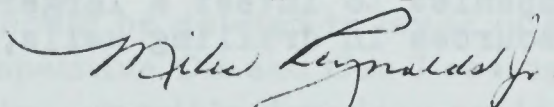
Geothermal Coordinator
Room 7000
U.S. Department of Interior
Washington, D. C. 20240

Gentlemen:

Austral Oil Company is only one of many companies that have followed with interest the course of events with respect to geothermal energy development in the U.S. The publication on November 29, 1972, of the revised proposed regulations for geothermal leasing and operations is sincerely welcomed.

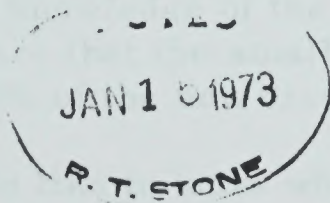
Like many others, Austral is ready to drill on a first rate geothermal prospect as soon as the leasing of the Federal lands involved can be implemented. We urge the Department of Interior to issue the final environmental statement as soon as possible so that exploration can commence in all prospective areas.

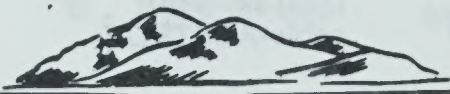
Yours very truly,



Miles Reynolds, Jr.
Vice President

MR,Jr/bjm





BALLARD-DAVIS ASSOCIATES

MANAGEMENT SERVICES

7873 WEST 46TH AVENUE

WHEAT RIDGE, COLORADO 80033

JIM BALLARD

421-8037

RAY DAVIS

December 20, 1972

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

I have read the proposed rules for the leasing of lands for geothermal resources. The proposed rule that seems to be unfair concerns the leasing of lands not within a known geothermal resource area. As the rule is proposed, any government land that is not in a known geothermal resource area is open to noncompetitive bidding; but if several people were to file in the same acreage simultaneously, then the land would be classified as a known geothermal resource area and thus open to competitive bidding. This proposed rule would all but eliminate the small company or individual from competing with the larger companies for geothermal leases. A system similar to oil and gas leasing would be a more equitable process.

Simultaneous filing with a nominal lease cost would allow companies to invest a larger amount of their financial resources in drilling wells, not in acquiring land.

Sincerely,

Ray K. Davis

Ray K. Davis

Ballard-Davis Associates

RKD/mfd

BAUMGARTNER OIL COMPANY
737 GRANT STREET
DENVER, COLORADO 80203
PHONE 222-1719

Cable Address
BAUMGARDIL

#7

DL 47

December 29, 1972

Geothermal Coordinator
Room 7000
U. S. Department of the Interior
Washington, D. C. 20240

Gentlemen:

I am writing this letter to comment on the Department of the Interior, Geothermal Resources' provisions for leasing of public, acquired and withdrawn lands.

I generally agree with your proposals, with the exception of sub-part 3210 regarding Noncompetitive Leases. As I understand it, the Geological Survey has already determined KGRA's and I see no reason why three or more filings on a particular parcel would automatically throw it into the KGRA category. This is a neat trick to clip applicants for a \$50.00 filing fee and then throw that parcel of land into a sealed bid category, where the Federal Government would again benefit to the exclusion of the small operator. I think that this particular sub-part should be deleted in favor of a system similar to that used in Noncompetitive Oil and Gas Leasing where after the first go-around of filing, monthly drawings could be held.

If this is not the case, I don't think you will find many independent operators prospecting for geothermal steam in the future as it will remain strictly a major company ball game. Historically, major companies have not been the ones for large exploration programs. Even a vague knowledge of the domestic oil and gas industry would make one aware that the small independent producer is the one who makes 80% of the new discoveries.

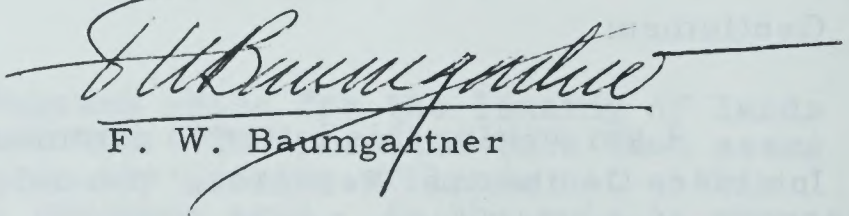
I would like to know who dreams up these far reaching proposals to eliminate competition and destroy the capitalist system of free and unrestrictive enterprise. It surely is not in the best interest of the United States to pursue such a policy.

December 22, 1972

My Company has worked two years developing prospects upon which to do further exploratory work. However, if sub-part 3210 is not deleted, I will have to let the bureaucrats in Washington do the prospecting for me.

Very truly yours,

BAUMGARTNER OIL COMPANY



F. W. Baumgartner

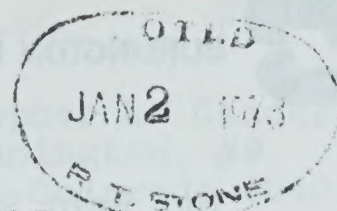
FWB:au

cc: Congressmen Brotzman and Armstrong, Crane and Thone
Senator Dominick



BURLINGTON NORTHERN

RESOURCES DEVELOPMENT
DEPARTMENT



176 East Fifth Street
St. Paul, Minnesota 55101
Telephone (612) 227-0911

#20

Mr. Reid Stone
Geothermal Coordinator
Room 7000, U. S. Dept. of
the Interior
Washington, DC 20240

December 27, 1972

Dear Mr. Stone:

Time is running out on the invitation of the Secretary of the Interior for the public to comment on revised regulations to govern the proposed leasing of geothermal resources on public lands. We have studied the original regulations and the proposed changes and although there are a number of minor items with which we might take exception, the major item of concern to us is Section 3201.1-6 Excepted Areas and in particular to Recreation Areas. We appreciate the fact that this is stated exactly the same as it appears in the Federal Regulations. It seems to us that it could be construed to apply only to existing National Recreation Areas and not necessarily to those added in the future.

In view of the recognized "urgent need to develop needed new sources of energy as rapidly as possible", it is perplexing to us that National Recreation Areas and other similar lands should be excluded from prospecting for geothermal energy. We could agree that lands in the National Park System should not be leased unless there is an extreme National emergency, but flexibility should be granted to the Secretary in issuing leases on other Federal lands. This is particularly true because the possible environmental damage and evidence of pollution that might result from such a development can be comparatively minimal. It appears that you are prejudging that recreation is more important than new sources of clean energy. We urge that you reconsider the language of this Section and either permit the Secretary to issue leases on Federal lands other than those in the National Park System or grant the Secretary flexibility in doing so.



BURLINGTON NORTHERN

Mr. Reid Stone
USDI-Washington, DC
Sheet 2.
December 27, 1972

We appreciate the opportunity of submitting these comments and hope that they will be instrumental in changing the language of this Section of the Proposed Rules.

Sincerely,

Ernest E. Thurlow
Assistant Vice President
Minerals and Land

EET/ao

#10
Christopher R. Candee
405 Washington, #9
Golden, Colorado 80401

December 14, 1972

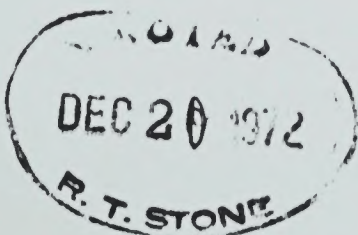
Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir;

I am a consulting geologist working in the field of geothermal exploration. I have been reading the proposed rules for the leaseing of public lands for geothermal resources. The rules seem to be very good with the exception of the regulations regarding noncompetitive leasing. It appears to me, as the rule is proposed, that if several people apply for the same acreage within the 30 day period after the first filing, then the acreage could be classed as a KGRA and thrown open to sealed competitive bidding. If this is the case, then this rule would tend to favor the larger companies that have more capital and put the small company at a great disadvantage in competing for geothermal leases. Perhaps, I have misinterpreted this rule and if so, would you please clarify the actual procedure for the leasing of areas not within a KGRA.

Sincerely Yours,

Christopher R. Candee
Christopher P. Candee

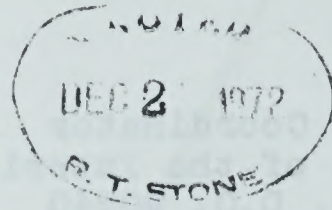


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POLICY

1600 TWENTIETH STREET, N.W. WASHINGTON, D.C. 20009 202 387-4222

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Attorneys at Law



December 27, 1972

Mr. Reid Stone
Geothermal Coordinator
Room 7000
United States Department of Interior
Washington, D. C. 20240

Re: Proposed Geothermal Resources
Leasing and Operating Regulations
37 Fed. Reg. 25282 (November 29,
1972)

Dear Mr. Stone:

These comments are submitted on behalf of the Sierra Club in response to the above-referenced revisions of proposed leasing and operating regulations designed to implement the Geothermal Steam Act of 1970 (the "proposed regulations") and to supplement comments and recommendations previously submitted with respect to such regulations as published by the Department of Interior ("Department") in the Federal Register on July 23, 1971, to the Draft Environmental Impact Statement for the Geothermal Leasing Program (September 1971), and to the Supplement to such Draft Environmental Impact Statement (May 1972).

I. Procedural Comments

While the Notice of Proposed Rulemaking with respect to the proposed regulations states that a "Final Environmental

Statement will be issued. . .prior to promulgation of any leasing, operating and unit regulations", there is no indication that comments on such Statement addressed to the proposed regulations will be considered in formulating the final regulations and the Sierra Club, like other interested persons, is being asked to comment on the proposed regulations now--without the benefit of the Final Environmental Impact Statement relating thereto. The Sierra Club objected to this bifurcated procedure when the proposed regulations were initially issued for comment in July, 1971 prior to the availability of the related Draft Environmental Impact Statement.* After considerable discussion, including the Council on Environmental Quality, the Department agreed to extend the initial comment period on the proposed regulations to coincide with the comment period on the Draft Environmental Impact Statement.** I am frankly baffled at your failure to adopt an identical procedure as regards the Final Environmental Impact Statement, i.e., to issue revisions in the proposed regulations contemporaneously with the related Final Environmental Impact Statement and to have their comment periods coincide. I urge you promptly to publish in the Federal Register a notice to the effect (a) that interested parties may submit comments and recommendations with respect to the proposed regulations during the comment period established for the Final Environmental Impact Statement, as well as during the period provided for in the November 29 Notice of Proposed Rulemaking, and (b) that any such submission will be considered in formulating final regulations.

II. Substantive Comments

The Department has disregarded virtually all of the comments and recommendations made by the Sierra Club in

*A copy of my letter to Secretary Morton, dated September 15, 1971 is enclosed.

**See letter, dated November 11, 1971, to me from Frederick Ferguson, Assistant Solicitor-Minerals, a copy of which is enclosed.

December 27, 1972

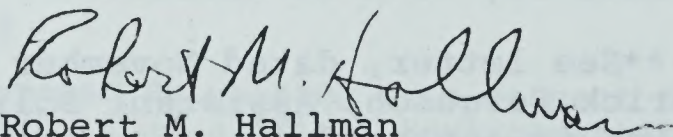
prior comments submitted to you in November, 1971, and June, 1972, and I hereby urge you to reconsider our prior submissions.

The few revisions made in the proposed regulations as regards environmental hazards, i.e., requiring compliance with state pollution standards, and requiring monitoring and minimization of land subsidence and seismic activity are steps in the right direction; however, the Department has failed, for example, to require public input and hearings with respect to site selections for leasing and adoption of environmental safeguards, or compliance with local environmental regulations; and has unwisely delegated environmental policy making to supervisors in the field. None of the revisions in the proposed regulations alters our previously expressed conclusion that such regulations are inadequate and fail to comply with the National Environmental Policy Act of 1969, as well as the public interest and environmental protection standards set forth in Section 15 of the Geothermal Steam Act of 1970.

This letter is not intended to constitute the entire comments or recommendations of the Sierra Club with respect to the proposed regulations. Additional comments will be prepared following receipt and study of the Final Environmental Impact Statement relating thereto.

I look forward to a prompt response to our request for expansion of the comment period regarding the proposed regulations and hope you agree that the adoption of the procedure recommended herein is essential to securing effective and informed public participation in this rule-making proceeding.

Sincerely yours,


Robert M. Hallman

Attorney for the Sierra Club

Enclosures

CENTER

1000 TWENTYFIFTH STREET, N.W. WASHINGTON, D.C. 20009 202 387-4222

FOR
LAW
AND
SOCIAL
POLICY

Comments

*Please Return
Brt.*

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September 15, 1971

Honorable Rogers C. B. Morton
Secretary of the Interior
United States Department of Interior
Washington, D. C. 20240

RE: Notice of Proposed Rule Making
Regarding Geothermal Resources
Leasing and Operations on Public,
Acquired, and Withdrawn Lands
(36 Fed. Reg. 13722-40, July 23,
1971).

Dear Secretary Morton:

The Sierra Club, a national conservation organization, has requested us to analyze and prepare comments with respect to the proposed regulations set forth in the above-referenced Notice of Proposed Rule Making regarding Geothermal Resources Leasing and Operations on Public, Acquired, and Withdrawn Lands.

The Notice, published in the Federal Register on July 23, 1971, provides that interested parties may submit written comments, suggestions, or objections regarding the proposed regulations within 60 days of the date of publication, i.e., by September 21, 1971. The basic objective of the comment period -- as stated by your Department in the Notice -- is "to afford the public an opportunity to participate in the rule-making process."

The proposed regulations are intended to implement the Geothermal Steam Act of 1970 (30 U.S.C. Sections 1001-21) which authorizes you to lease certain public lands for exploration,

*Member of New York State Bar only.

development and production of geothermal steam and associated geothermal resources, including some mineral by-products and de-mineralized water. The Act specifically provides for the inclusion of provisions in the implementing regulations which 1) prevent waste; 2) conserve geothermal and other natural resources; 3) protect the public interest; and 4) protect water quality "and other environmental qualities." (Section 1023). The Environmental Impact Statement submitted to Congress by your Department with respect to the legislation also stressed the need to develop rules and regulations "essential to protect the environment." [See Geothermal Resources Development, Senate Report No. 1160, 91st Cong. 2d Sess. at 29, September 4, 1970].

The proposed regulations set forth, inter alia, procedures and factors to be considered in selecting land for leasing, as well as for formulating lease terms and conditions governing surface use and drilling operations. They purport (in very general terms, largely paraphrasing the statutory standards) to provide means for evaluating and protecting against environmental hazards associated with development of geothermal resources. For example, they provide that "special terms and conditions" for leases are to be developed "when needed to protect the environment and . . . other natural resources"; lessees are required to "employ such soil and resource protection measures as the Supervisor (i.e., Director, Geological Survey), determines are necessary", to "control noise emissions from operations as directed by the Supervisor . . . , to take aesthetics into account in the planning, designing, and construction of facilities on leased premises. . . , (and to) take all necessary precautions to keep all wells under control at all times. . . ."

Our preliminary review of the generalized provisions in the proposed regulations relating to the identification of environmental problems, development and implementation of environmental safeguards, and the vague "public interest" standard for excepting lands from leasing raises serious doubts concerning their adequacy regarding protection of environmental quality and the public interest. Such doubts are also raised by, inter alia, the failure to require applicants for leases to prepare environmental impact statements, including discussions of possible alternatives; the lack of a mandatory requirement for public hearings with respect to selection of land for leasing, the grant of leases or the grant of permits for electric power plants and other commercial or industrial facilities; the surprisingly small and vague bonding requirements; the failure even to mention earthquake implications or potential hazards involved in the possible use of nuclear explosives to fracture hot rocks and injection of coolants into

September 15, 1971

the resulting cavities to produce steam. A comprehensive discussion of all the possible environmental implications of the development of geothermal resources contemplated under the Geothermal Steam Act must be made available before the above-mentioned and other apparent inadequacies in the proposed regulations can fruitfully be evaluated. Procedures for making such information available to the public in a timely fashion have been provided for under the National Environmental Policy Act of 1969 (P.L. 91-190, January 1, 1970) (NEPA). Unfortunately, your Department has chosen to circumvent them in this case and has adopted procedures which make it as difficult as possible for the public to respond intelligently to your proposal for implementing the Geothermal Steam Act.

Despite the stated objectives of fashioning a regulatory framework to protect the public interest and the environment, and of involving the public in the rule-making process, the Environmental Impact Statements relating to the implementing regulations, called for under Section 102(2)(C) of NEPA, were not made available when the proposed regulations were published and, as yet, have not been issued. I have been informed by Reid Stone, the Geothermal Coordinator, Department of Interior, that the issuance of a draft impact statement has been postponed at least twice (on August 15 and September 1) and that the Department now intends to issue a 200 to 300 page draft statement within the next two weeks -- after the period for public comment on the proposed regulations has run.

In effect, this bifurcated procedure requires interested parties, such as the Sierra Club, to shoot in the dark -- to evaluate and comment upon the proposed regulations without access to clearly relevant material contained in the pending draft statement. In our judgment, the Department's formulation and proposal of a regulatory scheme governing activities which have significant environmental implications prior to completion and issuance of the requisite environmental impact statement is entirely unjustified and not responsive to the requirements of NEPA, or consistent with sound administrative practice. It effectively precludes informed public participation in the subject rule-making proceeding. Without the draft statement, we consider it impossible to evaluate intelligently and fully the adequacy of the proposed regulatory scheme in effectuating the public interest and environmental quality guidelines set forth in the Geothermal Steam Act, as well as the national environmental policy enunciated in NEPA. We also note that the

Department can only benefit from the improved quality of public comments likely to result from greater access to relevant information contained in the draft statement.

The Department of Interior itself has acknowledged the need for and usefulness of draft impact statements in assessing the environmental implications of major actions, like the rule-making involved here, as evidenced by the following statement in its current Environmental Quality Guidelines:

It is important that draft environmental statements be prepared and circulated for comment and furnished to the Council on Environmental Quality early enough in the review process before an action is taken in order to permit meaningful consideration of the environmental issues involved. (Chapter 2, Section 8F, 9/17/70).

The NEPA Guidelines of the Council on Environmental Quality reflect a similar judgment:

In accord with the policy of the National Environmental Policy Act and Executive Order 11514 agencies have a responsibility to develop procedures to insure the fullest practical provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties. [Section 10(c), April 23, 1971].

In its Second Annual Report the Council re-emphasized the importance of timely public access to impact statements in rule-making proceedings like this one, stating that NEPA:

permits the public to focus on the agency's environmental findings and conclusions through the environmental impact statement. . . . NEPA's requirements are particularly important in informal agency decisions (e.g., where no public hearing is held). . . . [T]he environmental impact statement is the only way the public can learn of. . . the environmental issues raised." (Second Annual Report, 165-66, August 1971).

In sum, sound administrative, as well as environmental, policy requires that interested persons be afforded the opportunity to evaluate and comment on the proposed regulations implementing the Geothermal Steam Act after having adequate time to study the pending draft environmental impact statement relating thereto. The opportunity to comment on the draft impact statement -- separate and apart from the proposed regulations -- cannot

September 15, 1971

serve as an adequate substitute for a coordinated analysis of and comment on these fundamentally related matters. Moreover, we cannot prudently speculate that our comments on the draft statement per se will be taken into account and given adequate consideration by the Department in formulating final regulations.

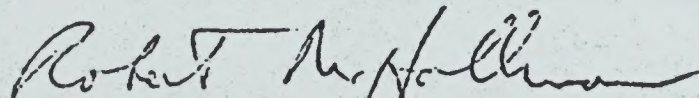
Therefore, we hereby request you promptly to publish a notice in the Federal Register to the effect that the period for comment by interested parties on the proposed regulations shall be extended beyond September 21, 1971 and shall run concurrently with the period for comment on the draft impact statement. This procedure will not result in any additional delay in implementation of the Geothermal Steam Act since public comments on the draft impact statement must be permitted for at least 60 days subsequent to issuance.

In addition, we strongly urge your Department to eschew the nonproductive and unjustified procedure employed in this proceeding, and to adopt formally the policy of making draft environmental impact statements available at the same time that the proposed agency action to which they relate is announced for public comment and of permitting coordinated comments thereon, based on all available information. This procedure would not only go far toward satisfying the increasing need (and demand) for informed public participation in public land decision making; but, it would presumably ensure that those who formulate proposed agency actions have taken into account the environmental impact thereof as disclosed in the draft statement.

This letter is not intended to constitute the entire comments, suggestions or objections of the Sierra Club with respect to the proposed regulations. Detailed comments will be prepared following receipt and study of the pending draft environmental impact statement.

We look forward to a prompt response to our requests and hope you agree that the adoption of the procedures recommended herein is essential to securing effective and informed public participation in this, as well as other, rule-making proceeding.

Sincerely yours,



Robert M. Hallman



Charles R. Halpern
Attorneys for the Sierra Club

September 15, 1971

cc: Hon. Russell Train
Hon. William D. Ruckelshaus
Hon. John Dingell
Hon. Henry M. Jackson
Reid Stone



United States Department of the Interior

OFFICE OF THE SOLICITOR
WASHINGTON, D.C. 20240

NOV 11 1971

Robert M. Hallman, Esq.
Center for Law and Social Policy
1600 20th Street, N. W.
Washington, D. C. 20009

Dear Mr. Hallman:

Thank you for your letter of November 3, 1971, addressed to Associate Solicitor Lindgren, concerning the closing date for submission of comments on this Department's proposed geothermal leasing and operating regulations to implement the Geothermal Steam Act of 1970, Pub. L. 91-581 (30 U.S.C. §§ 1001-1025).

We wish to advise you that the Department has further extended the closing date for submission of comments on the proposed regulations from November 12, 1971, to November 22, 1971. The latter date coincides with the closing date for submission of comments on the Department's Draft Environmental Impact Statement for the Geothermal Leasing Program. We understand that the notice of extension of time has been published in today's edition of the Federal Register.

Sincerely yours,

Frederick N. Ferguson
Assistant Solicitor - Minerals
Division of Public Lands



Chevron Oil Company
The California Company Division

1111 Tulane Avenue, New Orleans, LA 70112

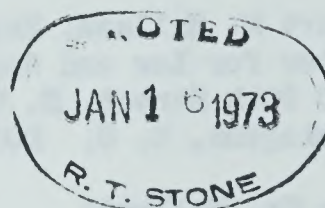
42

January 11, 1973

Geothermal Resources

37 F.R. 25282

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240



Dear Sir:

Pursuant to the invitation appearing in the November 29, 1972 Federal Register, we submit the following comments with respect to particular sections of the proposed regulations concerning exploratory activity on and the leasing of public lands for geothermal resources.

Section 3045.1-1(a).

This Section has been amended to provide for approval by the authorized officer of the Bureau of Land Management for the district in which the public lands are located of the "Notice of Intent to Conduct Oil and Gas or geothermal Resources Exploration Operations," which "Notice" must be filed by the Operator prior to conducting geophysical operations on public lands. The regulations contained in Subpart 3045 prior to this proposed change have been working very well since they were adopted in 1967, with no major problems arising between the Department and industry. We suggest that the approval requirement be deleted since we believe that the government's interest is adequately protected by the terms and conditions contained in the B.L.M.'s "Notice" form 3107-1 which has been approved by the Director.

If the "approval" requirement is to be retained, we suggest that the authorized officer be required to act upon an application within a reasonable time, advising the applicant whether or not his "Notice" is approved. We feel that this is necessary in order that the applicant can schedule his geophysical crews without any undue waste of time and energy.

Section 3200.0-5(j).

In defining a "Known geothermal resource area" or "KGRA", we believe that too much emphasis has been placed on "competitive interest". As written, two or three geothermal leases on Federal lands held by one Lessee would indicate a competitive interest. We do not feel such a result was intended by Congress in its definition of a KGRA in Section 2(e) of the Act. We believe that equal weight should be given other indicia, such as the geology and nearby discoveries, which would put the element of competitive interest in its proper perspective. In this connection, we quote from House Report 2140 on S-1674 (now the Act) as such report refers to Section 2(e):

January 11, 1973

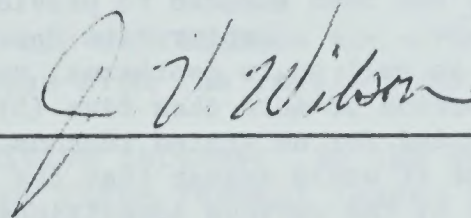
"Section 2 (e) defines the term "Known Geothermal Resource Area" and thus distinguishes between areas of competitive and noncompetitive leasing. This term is used in much the same sense as the term 'Known Geologic Structure' is in the Mineral Leasing Act. The term 'competitive interest' in this definition is not intended to require competitive leasing of Geothermal Resources automatically in every case in which two applications are filed for the same land. To determine whether a given area is or is not in a 'Known Geothermal Resource Area' consideration must be given to all factors. (emphasis added)."

We would appreciate consideration being given to the above comments and suggestions.

Yours very truly,

CHEVRON OIL COMPANY, THE
CALIFORNIA COMPANY DIVISION

By



CGT:sar



Chevron Oil Company
Western Division

1700 Broadway, P.O. Box 599, Denver, CO 80201

36

E. C. Woodroof
Vice President
and General Manager
Land

Denver, Colorado
January 10, 1973

Geothermal Leasing
37 F.R. 25282
Geothermal Operating Regulations
37 F.R. 25300

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Dear Sir:

We appreciate the opportunity to submit the following comments with respect to subject proposed regulations appearing in the November 29, 1972 Federal Register.

3045.1-1 (a) has been amended to provide for approval of the "Notice of Intent to Conduct - - - - - Exploration Operations." Since Subpart 3045 applies to oil and gas as well as to geothermal resources, a procedure which has worked well for a period of more than five (5) years without the approval feature has now been amended for no stated reasons. We suggest the approval requirement be deleted since it would appear that the United States' interest is very adequately protected by the various admonitions and requirements contained in numbered paragraphs 1 through 8 of Form 3107-1, copy attached.

If the approval feature is to be retained, the authorized officer should be required to act upon the Notice of Intent in a very short period of time, e.g., not more than seven (7) days and preferably not more than 48 hours, exclusive of Saturdays, Sundays and holidays. For various reasons (weather conditions, crew availability, permit problems, information obtained from current operations, to name a few), it is often necessary to change exploration plans with little, if any, advance notice and move to a new area. Without early action on a given notice, valuable time and money will be wasted.

Also in 3045.1-1 (a), "District Manager" has been deleted and "authorized officer" substituted therefor. For purposes of consistency, this same change should be made in 3045.2, 3045.3-1 (a) and 3045.3-3.

The leasing regulations have been unduly complicated by the addition of "Geothermal resource province" defined in 3200.0-5 (h) and "Potential geothermal resource area" defined in 3200.0-5 (i).

In the first place, the creation of these two types of areas would seem to be contrary to the intent of the Act. Sec. 4 would seem to make it clear that Congress intended only two types of areas, i.e., known geothermal resources areas and non-known geothermal resources areas.

Secondly, the definitions are less than precise. For example, one of the characteristics of a geothermal resource province is said to be "subsurface geothermal gradients generally in excess of two times normal" -- 3200.0-5 (h) (3). First, "normal" is not defined. Second, almost any well drilled for oil or gas encounters heated fluids that enter the well bore. Although uneconomic, these heated fluids could be utilized for steam generation if properly protected against heat loss and run through the newer types of heat exchanger. The average temperature gradient is about 1°F per 100' of depth. Assuming 60°F average surface temperature, it would require a depth of 15,200' - $(212^{\circ}\text{F} - 60^{\circ}\text{F}) \times 100'/1^{\circ}\text{F}$ - to assure a boiling temperature for water. In other words, heat is present everywhere in the subsurface but only a small percentage of the subsurface is sufficiently hot that fluids can be economically recovered for the production of geothermal energy.

A "potential geothermal resource area" is defined as "an area containing an inferred geothermal reservoir". According to Webster, the word "infer" has numerous meanings, e.g., (1) "to derive as a conclusion from facts or premises"; (2) "guess, surmise", (3) "hint, suggestion". The standard for inference is not expressed in the definition.

We strongly recommend deletion of these two definitions and elimination of any reference to these two types of areas from the regulations.

Too much emphasis is placed on "competitive interest" in the designation of a KGRA-3200.0-5 (j). As written, two or three Federal leases in an area held by one Lessee would indicate a competitive interest. Surely such a result was not intended by Congress in its definition of a KGRA in Sec.2(e). We submit that the definition contained in the July 23, 1971 Federal Register be reinstated with the addition of the following clarifying language: "The filing of two or more applications for the same land does not of itself indicate a competitive interest." The addition of such language will aid in putting the element of competitive interest in perspective in determining the existence of a KGRA. In this connection, we quote from House Report 2140 on S-1674 (now the Act) as such report refers to Sec. 2 (e):

"Section 2 (e) defines the term 'Known Geothermal Resource Area' and thus distinguishes between areas of competitive and noncompetitive leasing. This term is used in much the same sense as the term 'Known Geologic Structure' is in the Mineral Leasing Act. The term 'competitive interest' in this definition is not intended to require competitive leasing of Geothermal Resources automatically in every case in which two applications are filed for the same land. To determine whether a given area is or is not in a 'Known Geothermal Resource Area' consideration must be given to all factors. (emphasis added)."

In 3000.0-5, 3200.0-5 (h), 3200.0-5 (j), 3203.1-3, 3203.1-4, 3203.1-5, 3204.3, 3205.3-5, 3205.3-9, 3230.1-5, 3230.3-2 (c), 3243.1, 3243.3-1, 3243.3-2, and 270.1, the words and phrases "geothermal steam", "steam or heated fluids", "geothermal steam or associated geothermal resources", and "steam" are used. These terms are used in the Act, but in Sec. 2 "geothermal steam and associated geothermal resources" are defined. To conform to the "geothermal resources" definition in 3000.0-5 (b), "one or more geothermal resources" or "geothermal resources" as appropriate should be substituted for the quoted words and phrases in the cited sections.

The effectiveness of 3200.0-6 has been decreased by insertion of "if he so elects" in line 3 of subsection (b). We suggest that environmental matters shall be considered prior to lease issuance rather than at some later time such as at the time of exploratory or development drilling or construction of a power generating plant and transmission facilities. If special operating requirements are deemed necessary in order to adequately protect the environment, these can be set forth in stipulations added to the lease. If environmental matters are considered prior to lease, the Lessee will be in a position to evaluate the advisability of expenditures leading to drilling, development and construction without the uncertainty which would attend subsequent environmental considerations.

When we talk of environmental matters being considered prior to leasing we envision that in the overwhelming majority of the cases a simple environmental analysis, taking only a matter of a few days at most, will be required. In any event, a time limit of not more than 90 days should be established for consideration of environmental matters and reaching a decision on issuance of a given lease. Delay beyond 90 days will result in undesirable delay in development of an expected valuable energy source.

We fail to see the need to acquire a separate permit for the use of the leased lands for a power generation plant or a commercial or industrial facility as required in 3200.0-8 in view of the requirement to file a plan of operation as set forth in 270.34. If the permit requirement is to be retained in the final regulations, 3200.0-8 should be supplemented to provide that the terms and conditions to be included in a permit shall not be inconsistent with and shall be no more onerous than the special terms and conditions developed as a result of the environmental review conducted under 3200.0-6, and the stipulations and terms and conditions established under 3201.1-2 (b), 3201.1-3, 3201.1-4 and 3201.1-5.

In 3203.1-3 (b), it is provided, "For the purposes of paragraph (a) of this section (emphasis added) production or utilization ---- in commercial quantities shall be deemed to include ----." Should not this same definition of commercial quantities apply in 3205.3 (see comment below re number) and 3205.3-5, in which event "paragraph (a) of this section" should be deleted and "this Part 3200" substituted therefor?

We submit that 3203.1-5 (a) should be amended to define "primarily valuable" (lines 8 and 9). We recommend the term be defined to the effect that the leasehold is primarily valuable for the production of byproducts when one or more geothermal resources is no longer producible in commercial quantities. Such a definition would seem to do no violation to the intent of the Act.

Section 3203.2 should be amended to expressly permit leases to be issued for less than 1,280 acres for isolated tracts, i.e., a provision similar to that for oil and gas found in 43 CFR 3110.1-3 (a).

The diligent exploration requirement, particularly after the fifth year can, under given circumstances, become onerous and unreasonable. It is suggested that the following be added after "term" in the 19th line of 3203.5: "unless waived or modified by the Supervisor for good cause shown".

The Supervisor's discretion to impose additional and more stringent standards than Federal and State pollution abatement standards should be expressly limited to unusual and unique situations which reasonably demand such additional and more stringent standards, - 3204.1 (c).

3204.1 (e) should be amended by inserting "reasonable" after "take" in line 2, and by substituting "such land subsidence or seismic activity" for "such activity" in lines 6 and 7.

3204.1 (g) should be amended by inserting "reasonable" after "deemed" in line 2, and 3204.1 (i) by adding "reasonable" after "the" in line 2.

The next to the last sentence of 3204.3 (a) (2) presupposes that the authorized officer will act upon the objections by the Lessee to readjustment within 60 days, although he is not expressly required to do so. Such period of time for action may not be sufficient in a given circumstance. If action is not taken within the 60 days, the lease can be cancelled without further notice to the Lessee. To rectify this inequity, it is suggested that the subsection be amended by deleting "the lease may be terminated by either party" commencing in line 14, and substituting therefore "either party may serve notice upon the other that in the absence of an agreement within 30 days from receipt of such notice the lease will be terminated."

To provide for certainty, the rental should be established at \$1 per acre. At the time of application, the applicant should be able to estimate with certainty his costs of maintaining any lease. This is particularly important in view of the rental escalation provision of 3205.3-3 and the diligent exploration provisions of 3203.5 which are tied in with rentals. In other words, "not less than" should be deleted in line 3 of 3205.3-1 and in lines 2 and 3 of 3205.3-2. Any increase in rental can be effected by change in regulations from time to time as appropriate.

3205.3 should be 3205.3-3.

Again, to provide for certainty, a specific royalty should be provided for, rather than the "not less than" and "not more than" approach taken in 3205.3-5. We recommend the royalty on geothermal resources be set at 10% and on byproducts at 5% except for byproducts named as a mineral in Section 1 of the Act of February 25, 1920. Here too, any increase in the 10% royalty can be effected by change in regulations from time to time as appropriate.

To comply with Sec. 8 (b) of the Act, the 4th sentence of 3205.3-9 should be amended to read "Unless this lessee files with the authorized officer objections to the proposed rentals and royalties or (added) relinquishes the lease within 30 days after receipt of such notice, he shall conclusively be deemed to have agreed to such terms and conditions."

We make the same recommendation for 3205.3-9 as we did for 3204.3 (a) (2), i.e., delete "the lease may be terminated by either party" commencing in line 22, and inserting "either party may serve notice upon the other that in the absence of an agreement within 30 days from receipt of such notice the lease will be terminated."

We believe that part of 3206.8 which reads "at the time of the approval of the amendment of this paragraph" (commencing in line 3) should be amended to read "at the time of adoption of this Subpart 3206." We also believe that "this paragraph" in the last line should be amended to read "this Subpart."

We have very great difficulty understanding 3210.1. As mentioned above in connection with 3200.0-5, we recommended the deletion of the definition of "potential geothermal resource area" and any reference thereto in the regulations. To clarify 3210.1 we strongly recommend that the first two sentences be retained and the balance deleted. That balance is totally unnecessary for the efficient administration of leasing.

The requirement of 3210.2-1 (d) to file a proposed plan with an application is totally unreasonable. To file a meaningful plan would require the applicant to have completed his exploratory activity prior to application. For obvious reasons this is not practical and such an intent is certainly not reflected in the Act. We wholeheartedly agree that geothermal leases should not be acquired for speculation. But we believe that the provisions of 3203.5, Diligent exploration, and 3205.3-3, Escalating rental rates, effectively eliminate acquisition for speculation. A plan of operations is appropriately filed as required in 270.34.

As to 3210.3, we wish to reiterate our position expressed in connection with 3200.0-5 (j) that too much emphasis is being placed on "competition interest" in the designation of a KGRA.

No time period for filing nominations is expressed in Subpart 3211. We submit that a 30-day period should be provided to give all interested parties an equal chance to participate.

3211.3 should provide for giving notice to each nominator that he has a specified period of time (probably 15 days as provided in 3211.2) within which to qualify for a lease in accordance with Subpart 3210 if, in fact, the form of nomination submitted by him does not already contain the necessary qualifying information.

For clarification purposes, we suggest that "for that lease" be inserted after "bids" in line 16 of 3220.6.

3242.1-1 should be amended to recognize an assignment of a lease containing less than 640 acres because of an isolated tract situation. This conforms to our recommendation in respect to 3203.2.

270.11 - we respectfully submit that the Supervisor be required to consult with and receive comments from lessees and operators prior to the issuance of GRO orders and other orders and rules. To this end we recommend the next to the last sentence be amended to read: "Prior to the issuance of GRO orders and other orders and rules, the Supervisor may consult with, and receive comments from Federal and State agencies or interested parties, and shall consult with, and receive comments from lessees and operators."

Reference is made in 270.33 (b) to Part 3234. Should not the reference be to Subpart 3204?

It should be made clear in 270.34 that in approving any plan of operations the Supervisor shall not include any conditions or requirements which conflict with or are more onerous than those included in special terms and conditions which have been developed pursuant to 3200.0-6.

We make the same comment with respect to 270.41 as with 3204.1 (c). The Supervisor's discretion to impose additional and more stringent standards than Federal and State pollution abatement standards should be expressly limited to unusual and unique situations which reasonably demand such additional and more stringent standards.

We suggest the addition of "reasonable" after "such" in line 6 of 270.43.

We suggest a provision be made in 270.62 (a) or in 270.62 (b) (2) for the lessee to deduct a proportion of the cost involved in directly using geothermal resources in manufacturing, power production, conversion to a product which can be sold, including the cost of necessary transportation to the point of sale, or other industrial activity much as is allowed in 30 CFR 221.51.

270.75 refers to 270.49. It is believed the reference should be to 270.50.

271.12 Form of unit agreement.

January 10, 1973

Article 12.1 - while commencement of actual production after a discovery will probably be delayed for some time, as recognized by Sec. 6 (d) of the Act and 3203.1-3 (b), we recommend that the first sentence of 12.1 be amended to read "Upon completion of a well capable of producing unitized substances in paying quantities or as soon thereafter as required by the Supervisor, the Unit Operator shall - - - ." This conforms to the oil and gas unit agreement.

It is recommended that the following be added at the end of Article 14.2:
", and further provided that such written consent shall not be unreasonably withheld."

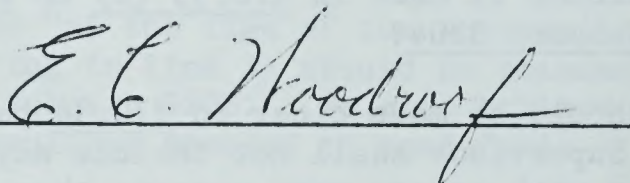
For the sake of clarity, it is submitted that the provisions of Sec. 6 (d) of the Act be included in Article 18.1 (b).

Any consideration given to the foregoing comments and suggestions will be sincerely appreciated.

Yours very truly,

CHEVRON OIL COMPANY, WESTERN DIVISION

By



Reproduced by:
Chevron Oil Company
P. O. Box 599
Denver, Colorado 80201

Form 3107-1
(July 1967)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NOTICE OF INTENT TO CONDUCT OIL AND GAS EXPLORATION OPERATIONS

Name _____ Address (include zip code) _____

hereby files this "Notice of Intent to Conduct Oil and Gas Exploration Operations" across and upon (give description of lands by township(s) and range)

The type of operation to be pursued is _____ magnetometer _____ seismograph _____ other (specify)

Approximate date of commencement of operations _____

Upon completion of work, the Bureau of Land Management District Manager shall be furnished a "Notice of Completion of Oil and Gas Exploration Operations."

The undersigned agrees that oil and gas exploration operations will be conducted pursuant to the following terms and conditions:

1. Exploration operations shall be conducted in compliance with all Federal, State and County laws, ordinances or regulations which are applicable to the area of operations including, but not limited to, those pertaining to fire, sanitation, conservation, water pollution, fish and game. All operations hereunder shall be conducted in a prudent manner.

2. Due care will be exercised in protecting lands in this notice. All necessary precautions shall be taken to avoid any damage other than normal wear and tear, to gates, bridges, roads, culverts, cattle guards, fences,
- dams, dykes, vegetative cover and improvements, and stock watering and other facilities.

3. Appropriate procedures shall be taken to protect any shafts, pits or tunnels, and shot holes shall be capped when not in use to protect the lives, safety, or property of other persons or of wildlife and livestock.

4. All vehicles shall be operated at a reasonable rate of speed, and due care must be taken to safeguard all livestock and wildlife in the vicinity of his operations. Bulldozers shall not be used without advance notification to the District Manager. Existing roads and trails shall be used wherever possible; if new roads and trails are made, care should be taken to follow natural contours of the lands where feasible and

- restoration and/or reseeding, as requested by District Manager shall be made.
5. Upon expiration, revocation or abandonment of operations conducted pursuant to this "Notice," all equipment shall be removed from the land and the land shall be restored as nearly as practicable to its original condition by such measures as the District Manager may specify. All geophysical holes must be safely plugged. Upon leaving the land, the District Manager shall be informed.
6. Upon request, the location and depth of water sands encountered shall be disclosed to the District Manager.
7. The party conducting such operations shall contact the District Manager prior to actual entry upon the land in order to be apprised of the practices which should be followed or avoided in the conduct of his operations in order to minimize damages to property of the United States.
8. Exploration operations conducted pursuant to this Notice are covered by nationwide bond No. 431581 on file with the Eastern States Land Office, Department of Interior, Bureau of Land Management, Washington, D.C. 20240.

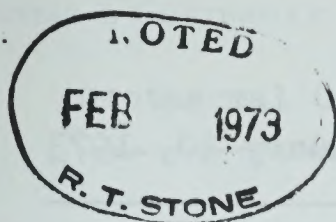
*The form is submitted in lieu of official Form 3107-1 and contains all of the provisions thereof as of the date of filing of this Notice.

(Signature)

(Signature of Geophysical Operator)

(Address including zip code)

(Address including zip code)

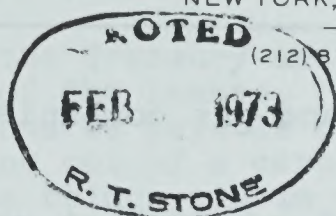


EISENSTAT & GOTTESMAN, P. C.

400 PARK AVENUE

NEW YORK, N. Y. 10022

#53

SAMUEL M. EISENSTAT
J. MICHAEL GOTTESMAN

January 30, 1973

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Dear Sir:

I am taking the liberty of writing to you in connection with the regulations soon to be promulgated under the Geothermal Leasing Act (Public Law 91-581).

I am special counsel to Barnwell Industries, Inc., a publicly held company engaged in the exploration for oil and gas. I am also Executive Vice President and a Director of Geothermal Exploration Co., Inc., a recently organized subsidiary of Barnwell Industries, Inc., which will explore and develop geothermal prospects.

We are very excited about the geothermal potential of this country. It may provide one of the needed answers to the energy crisis now facing our nation. Barnwell Industries, Inc., as many other independent exploration companies, has in the past explored for oil and gas where the larger companies were not interested in directing their efforts. The result of these activities of the independent exploration companies has in many cases been the development of oil and gas reserves which in the aggregate have contributed substantially to the country's reserves.

Our company is dedicated to the exploration for geothermal resources and will devote its resources to this end. The regulations under the Geothermal Leasing Act and the ensuing leasing of federal lands is eagerly anticipated for this should provide the vehicle for substantial exploration activity in the immediate future.

We are very concerned with the mechanics of the leasing and specifically with those regulations to be promulgated under Sec. 4 of the Act relating to the competitive bidding for federal leasing of "Known Geothermal Resource Areas". My concern relates to the inability of my company and other similar independent companies to meaningfully

compete with the major oil and gas companies in the competitive bidding.

Initially, I would submit that were the leasing to be conducted as are other federal competitive leasing (e.g. offshore leasing) this would operate as a discrimination in favor of the major companies to the detriment of the smaller companies. The smaller companies do not have the financial capacity even in consortium to competitively outbid the major companies. The only way the smaller companies will be able to explore on federal lands under present type bidding will be through a farm-out from one of the major companies, which is a very costly way of exploring.

Furthermore, this I submit is patently unfair as it relates to certain smaller companies who have been very much involved in geothermal development. There can be no dispute to the statement that the Magma Companies and Termal Power have done as much, if not more, than any other entity to foster the development of geothermal energy. These pioneering companies will either have to come within the provisions of the grandfather clauses (if they can meet the bid) or be forced to pass a particular lease to a company with greater financial capacity.

Secondly, and equally as important, traditional federal bidding will not encourage immediate exploration and development of leases which is so essential. A major oil company can afford to sit with a federal geothermal lease until it sees fit to develop it. It means nothing for such a company to pay the rentals required under the lease. Nor is this merely a theoretical conclusion -- this exact situation exists in the oil and gas industry. Very few of the prospects developed by my company were acquired directly by it from the owner of the mineral interest. They were acquired through farm-outs from major companies who had inventoried the leases and were not interested in developing the prospects themselves but were content on speculating on the leases and on waiting until a third party agreed to explore and develop them. The intervention of this speculative element which must be found where traditional competitive bidding is present is counter-productive to a prompt development of the resource.

I would like to propose a format for the bidding which would permit a truly competitive atmosphere, generate

Geothermal Coordinator

-3-

January 30, 1973

revenues to the Treasury and at the same time foster prompt development of the leases. I would like to suggest that the lease bonus be payable over a period of years (e.g. 5-7 years) and out of a certain percentage of first production as opposed to being paid in its entirety up front. Interest could be charged on the outstanding balance at a favorable rate. Finally, there should be an obligation to commence exploration immediately and to develop the prospect without delay. I would add that this proposal should apply to all competitive bidding including the exercise of the "grand-father rights".

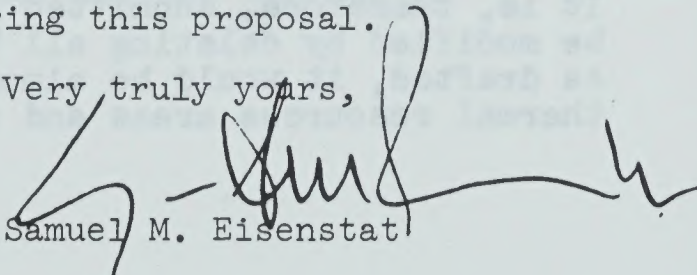
Needless to say, this proposal is not revolutionary but, in my opinion, it would create the necessary atmosphere for the proper development of the federal leases. The major oil and gas companies must and will play an important role in geothermal exploration -- but so must the smaller independent companies and the underlying theory behind this suggestion is to permit such independents to compete. With the possible exception of Union Oil, the present status of geothermal development has not been the result of the activity of the major oil companies. Their involvement has been only recently and only after many years of pioneering dedication by companies such as Magma Power, Magma Energy and Thermal Power. The majors should be encouraged to compete but should not have the edge merely because of their enormous financial capability.

I would note that Congress seems to have intended to permit the smaller operator to actively participate in geothermal exploration by limiting the acreage one person could hold. This same philosophy should be carried through to the regulations relating to the competitive bidding.

Our company has over the past years been actively engaged in the exploration for oil and gas. We have explored where the major companies would not explore and the results have been most rewarding -- including our participation in a joint venture which has discovered in excess of 1.3 trillion cubic feet of gas in Alberta, Canada. We are very excited about geothermal development and we intend to apply our experience, resources and expertise in this industry. We believe that there are many other companies similarly situated. All we ask is that we be given a fair chance to compete.

Thank you for considering this proposal.

Very truly yours,

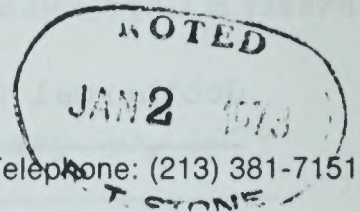

Samuel M. Eisenstat

SME:fc

C-D-73



#21



Getty Oil Company | 3810 Wilshire Boulevard, Los Angeles, California 90010 • Telephone: (213) 381-7151

California Exploration and Production Division G. H. Truran, Vice President and General Manager

December 27, 1972

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

RE: PROPOSED GEOTHERMAL RESOURCES
REGULATIONS

Gentlemen:

Getty Oil Company has reviewed the proposed regulations relating to the leasing and development of geothermal resources published in the FEDERAL REGISTER of November 29, 1972 (Volume 37, pages 25282-25313), and wishes to offer for your consideration a number of suggested modifications.

In Subsection (b) of Section 3000.0-5 the term geothermal resources is defined. However, throughout the proposed regulations, particularly those dealing with the 3000 series, there appears the undefined term "geothermal steam." In the interest of consistency and to avoid confusion, either the defined term geothermal resources should be utilized throughout the regulations or, alternatively, the definition should be expanded, as in the Geothermal Steam Act of 1970, to include "geothermal steam and associated geothermal substances" (30 U.S.C. 1001 (c)). This possible ambiguity is particularly significant in the provisions of the proposed regulations relating to by-products of geothermal resources.

In Subsection (g) of Section 3200.0-5, in the interest of completeness, the definition of the "Area of operation" should be expanded to include a power plant site or other related geothermal resources facilities (i.e. such as mineral extraction plant).

In Subsection (j) of proposed Section 3200.0-5, it is respectfully submitted that the definition of "Known geothermal resources area" is inconsistent with the statutory definition. It is, therefore, submitted that the proposed regulation should be modified by deleting all but the first eleven lines thereof. As drafted, it would be almost impossible to have both known geothermal resources areas and noncompetitive areas which would be

available for simultaneous filings. However, the statute clearly contemplates both such areas.

In order to promote certainty in leasing procedures and to avoid undue delay, it is recommended that under proposed Section 3200.0-6 other interested bureaus and Federal agencies be required to submit their reports and suggestions concerning any proposed leasing of areas within 120 days from their receipt of request for such comments from the Director.

In our opinion, the proposed provisions of Section 3200.0-8 relating to surface usages for a power plant site or related industrial facility are unduly onerous. If in fact there has been a discovery of geothermal resources in commercial quantities, lessee must be given the right to fully develop such resources (including construction of a power plant and related facilities) either under the lease or a separate permit. If a separate permit is to be required, the lessee should be guaranteed that such permit will be issued. There should be no right to deprive a lessee of geothermal resources which he has discovered through denial of a permit to build the necessary facilities to develop them.

The last sentence of proposed Section 3202.2-1 (c) should be deleted in view of the limited acreage quota under the Act. Each person should be allowed to hold the maximum acreage permissible under Subsection (b). There should not be a separate association quota in addition to the individual lease quota.

The provisions of proposed Section 3202.2-1 should be amended to permit the filing of simultaneous applications in excess of the allowable acreage limitation. A lessee should be given 30 days after the lease awards to withdraw applications which caused him to exceed the quota. This would in general conform to present leasing procedures for oil and gas, in that there is no chargeability for simultaneously filed offers until after the drawing takes place. This suggested procedure is also in accordance with arrangements which were recently observed in bidding on oil and gas lands in Alaska.

It is submitted that the provisions proposed in Section 3203. requiring diligent exploration are contrary to the Geothermal Steam Act of 1970 and are also without precedent under the Mineral Leasing Act. There is no reason for imposing more stringent requirements for the development of geothermal resources than for oil and gas. There is absolutely no justification for requiring exploration expenditures as well as annual rentals. Further, the provision for escalation of rentals is inconsistent with the statutory mandate and intent of Congress in its various committee reports concerning the Geothermal Steam Act of 1970, i.e. that the act was to be

administered to encourage the development of geothermal resources. Punitive rentals are not consistent with this objective.

The provisions of proposed Section 3210.2-1 requiring detailed maps and plans for operations at the time the lease application is filed create a premature and unrealistic procedure. At the time an application is filed, and prior to the conduct of exploratory operations, the lessee will not have adopted a detailed plan. The net result of these regulations, if finalized in their present form, would be merely to require some type of perfunctory statement which would not be of assistance to either the lessor or the lessee.

The authorization under proposed Section 3210.4 for rejection of an application for a noncompetitive lease, upon other than environmental grounds, is unwarranted and inconsistent with the statutory provisions pursuant to which such regulations are to be promulgated. The only other possible grounds, which should be set forth in this section, is the failure to qualify to hold geothermal leases under Section 3202.

Under proposed Section 3241.5, in the case of a lease upon which shut in commercial geothermal wells have been drilled, the lessee should be given 90 days advance written notice of expiration.

The 90-day period to remove facilities after expiration of a lease, as proposed under Section 3245.4, is unrealistic, particularly in instances where a developed lease has become subcommercial. A one-year period would be appropriate.

In connection with filings under Section 271.9 of the Operating Regulations, all such information should be maintained as confidential until the unit to which they pertain has been terminated.

In connection with the proposed form of unit agreement set forth in Section 271.12, we would urge that in Article IV in lieu of an automatic contraction, the supervisor should be authorized to extend the 5-year period upon an appropriate showing by the unit operator.

We appreciate the opportunity which has been afforded to submit the foregoing comments for your consideration.

Very truly yours,

GETTY OIL COMPANY

By: 

G. H. Truran



#33

Getty Oil Company | P.O. Box 5237, Bakersfield, California 93308

California Exploration and Production Division

January 12, 1973

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

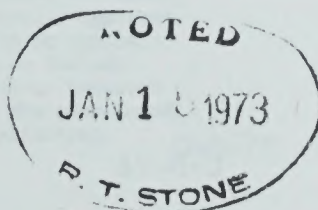
Re: Proposed Geothermal Resources
Regulations

Gentlemen:

This letter is to supplement Getty Oil Company's letter of December 27, 1972. We respectfully submit for your consideration the following additional comments on proposed modifications of the Geothermal Resources Regulations published in the Federal Register of November 29, 1972.

In Subsection (j) of proposed Section 3200.0-5, it is respectfully submitted that the definition of "Known geothermal resources area" is inconsistent with the statutory definition. It is, therefore, submitted that the proposed regulation should be modified by deleting all but the first eleven lines thereof. As drafted, it would be almost impossible to have both known geothermal resources areas and noncompetitive areas which would be available for simultaneous filings. However, the statute clearly contemplates both such areas. It is inconceivable the Department of Interior could consider the mere existence of two or more Geothermal leases would classify the area KGRA. By comparison, if the Oil and Gas Regulations followed the same procedure, most all areas of oil and gas activities would classify the area KGS. It is a known fact that the establishment of production on existing oil and gas leases clearly constitutes a KGS. We believe the same provisions should apply in establishing a KGRA in Geothermal Resources Areas. Revising this subsection (j) of 3200.0-5 as proposed, would necessitate modification of Section 3210.1.

For your convenience, we enclose a xerox copy of Section 3210.1 as published in the November 29, 1972 Federal Register which has been modified by deletions and insertions as noted thereon. Essentially, this modification provides that during the 30 day simultaneous filing period, the tracts that may be filed on are



C-D-77

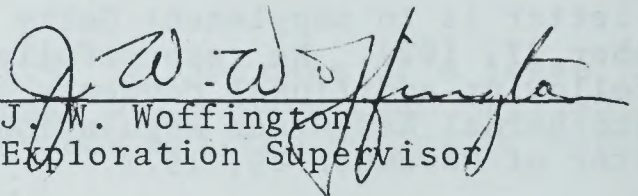
January 12, 1973

predesignated as set forth in the suggested modification of 3210.1, Subpart (c), and as noted on the attached township plat.

We believe this modification would reduce the Department of Interior's work load during this period by at least 50%. In addition, it would eliminate the monstrous formula which presently would be applied to overlapping applications. The applicant would also know at the time of filing what lands he could anticipate acquiring. We take no pride in the authorship of this suggested modification, but firmly believe that due consideration in some form be given to the predesignation of tracts during the 30 day simultaneous filing period.

Very truly yours,

GETTY OIL COMPANY

By 
J. W. Woffington
Exploration Supervisor

JWW:br
Encl.

- Sec.
3211.2 Nominating procedures.
3211.3 Leasing units receiving multiple nominations.
3211.4 Leasing units receiving single nominations.
3211.5 Rental returned.

Subpart 3210—Noncompetitive Leases; General

§ 3210.1 Availability of land.

Lands and deposits subject to disposition under this part which are not within any KGRA will be available for leasing after the effective date of these regulations. All applications to lease the same lands which are filed between the effective date of these regulations and 30 days following that time will be considered to have been filed simultaneously, and the respective priority of the various applications will be determined in accordance with § 3210.3. An application will be deemed to be for the lease of the same lands as a previous application when it includes ~~not less than half the acreage embraced in the previous application. The date and the time when the first application on a tract is filed will be recorded. (a) No action on any application will be taken until the conclusion of the initial 30-day period. At that time, the tracts in a potential geothermal resource area will be listed in the order in which the first application was filed on each. Final action will not be taken on any application filed on a tract until final action has been taken on all the applications on each tract within the same potential geothermal resource area preceding that tract on the list: Provided, however, That if, because of an appeal or for some other reason, final action is delayed on a tract having priority, final action may be taken on tracts having lower priority as long as that final action does not result in the issuance of a lease within that prospective area as to cause it to become a KGRA.~~ (b) Final action will not be taken on any application filed after the initial 30-day period until final action has been taken on all applications filed during that period on that potential geothermal resource area. If, after the conclusion of the 30-day period, applications are filed on more than one tract within a potential geothermal resource area on the same day, the tracts will be listed in the order in which the first application was filed on each. Final action will not be taken on any application filed on a tract until final action has been taken on all the applications on each tract within the same potential geothermal resource area preceding that tract on the list and on all applications on tracts in that potential geothermal resource area filed on any previous day: *Provided, however, That if, because of an appeal or for some other reason, final action is delayed on a tract having priority, final action may be taken on tracts having lower priority as long as that final action does not result in the issuance of a lease within that prospective area as to cause it to become a KGRA.* (c) An application

*any portion of

*unless the lower priority application or applications include acreage embraced in the questioned application.

*unless the lower priority application or applications include acreage embraced in the questioned application.

~~which, because it does not cover at least half the acreage included in a previous application, is not deemed to have been filed simultaneously with that previous application. It will be provided by the date when the application is filed in a lease by the time it is subject to final action. But the authorized officer, if he determines it desirable, may add to the application contiguous acreage not in excess of the acreage deleted.~~

(c) Provided however, all applications to be filed on a tract between the effective date of these regulations and 30 days following that time are for this 30 day period only, predesignated and described as follows: Each Township will comprise 18 tracts described as Tract 1, Sections 1 and 2; Tract 2, Sections 3 and 4; Tract 3, Sections 5 and 6; Tract 4, Sections 7 and 8; Tract 5, Sections 9 and 10; Tract 6, Sections 11 and 12; Tract 7, Sections 13 and 14; Tract 8, Sections 15 and 16; Tract 9, Sections 17 and 18; Tract 10, Sections 19 and 20; Tract 11, Sections 21 and 22; Tract 12, Sections 23 and 24; Tract 13, Sections 25 and 26; Tract 14, Sections 27 and 28; Tract 15, Sections 29 and 30; Tract 16, Sections 31 and 32; Tract 17, Sections 33 and 34; Tract 18, Sections 35 and 36. In the event that the lands have not been surveyed under the public land rectangular systems, the lands within any tract shall be described in accordance with Section 3203.4. Each application filed in the proper BLM office during this period describe all of the lands of the United States in Geothermal Resources ownership contained in the two sections of any one tract above described and each application during this period shall embrace all of the lands in the two sections of the tract on which application is filed whether 1280 acres, more or less, excepting and providing, however, in the event any tract contains less than 320 acres in United States ownership such parcel shall be described with the lands in the closest adjacent tract containing the most acreage in United States ownership and, if there is more than one closest adjacent tract of equal acreage, such parcel of 320 acres or less shall be described in the closest adjacent tract of equal acreage which, in order of first priority is north, or south, or east or west from said parcel.

LAND MEMORANDUM

Sec's, _____ T. _____ R. _____ Mer.

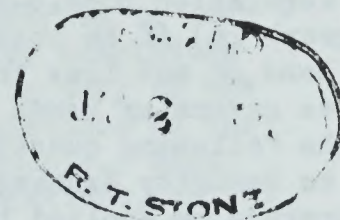
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	TRACT 3 6 — 5		TRACT 2 4 — 3		TRACT 1 2 — 1		6
12	TRACT 4 7 — 8		TRACT 5 9 — 10		TRACT 6 11 — 12		7
13	TRACT 9 18 — 17		TRACT 8 16 — 15		TRACT 7 14 — 13		18
24	TRACT 10 19 — 20		TRACT 11 21 — 22		TRACT 12 23 — 24		19
25	TRACT 15 30 — 29		TRACT 14 28 — 27		TRACT 13 26 — 25		30
36	TRACT 16 31 — 32		TRACT 17 33 — 34		TRACT 18 35 — 36		31
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Geothermal Coordinator
Room 7000
U.S. Department of the Interior
Washington D.C. 20240

December 28, 1972

Dear Sir:

SUBJECT: PROPOSED GEOTHERMAL REGULATIONS

Thank you for permitting me to submit comments on the new proposed geothermal regulations. They are useful and should go a long way in developing the needed energy requirements of our society. My knowledge of geothermal energy is limited-due mainly to lack of sufficient data. I am aware that in 1965, Donald White, writing for the Geological Survey estimated that the use of geothermal energy (in 1965) was about 7.5×10^{15} cal/yr with the potential amount to be utilized as 10-100 times more. In 1971, M. King Hubbert, writing in Scientific America and using the figures of Donald E. White, estimated that that amount were withdrawn over a period of 50 years there would be about 60,000 megawatts per year. In December of the same year, J. Hilbert Anderson submitted a paper at the American Institute of Chemical Engineers disputing the figures and estimates of M. King Hubbert. He estimated that 957×10^{15} Btu's flow to the surface each year. Using this figure and calculating on the base of 13% utilization of this heat flow he projected a useage of 4,160,000 megawatts. My own calculations (using figures, estimates and projections detailed in the book Resources and Man and published in the Department of Interior news releases) tend to support those of Mr. Hubbert's. Admittedly they could be wrong. Whatever the case, rules and regulations must be made to cover these operations.

Code Regulation 3045.0-5: Definition "Oil and gas or geothermal resources explorations" to cover search for evidence of said resources and includes, geophysical operations, road-trail construction and cross-county transit by vehicle over public domain. As applied under (68 Stat. 1146; 43 U.S.C. 931) national parks, monuments, etc. are not subject to public leasing of land. Use may be authorized by the Secretaries discretion. The proposed regulations covers this aspect quite well. Another part of this regulation states that an application must have five (5) parts: 1) name of person, company or corporation for whom exploration is being done; 2) Statement of compliance with regulations; 3) a description of operations; 4) description of township and range, and; 5) Approximate date of commencement. Would (do) any of these provisions provide for public hearings, review of any submitted statements or documents, or issuance of an impact statement as provided for under the National Environmental Policy Act?

Code Regulation 3045.3-1(b): It is stated: A party will be excused from... paragraph (a) if he possesses either a nationwide bond... of \$50,000 or a state-wide bond of not less than \$25,000... I am not familiar with the provisions and statutes governing bonds and property leaseholds, therefore I feel as if I must ask the following questions: (1) Will the nationwide or statewide bond be subject to Security Exchange Commission regulations? (2) Will partnership bonds or surety's be applied the same as above? (3) What provisions, if any, will allow for public notifications and, if necessary, public-government action against such holders? (4) If the answer to numbers (1) or (3) is affirmative, will this nullify section 270.77 of these regulations?

Code Regulations 3203.1-5 (c): As I understand it, this provides for regulations which the Department of the Interior Secretary might issue as provided for by 41 Statute 449; 30 U.S.C. 186 and 47 Statute 1570; U.S.C. 30 124. There is no mention of possible conflicting of interest between governmental departments and federal agencies. There is also, to my knowledge, no provision for public interest group intervention. I would hope that a specific section would be included to provide for governmental conflict or public interest concern.

Code Regulation 3203.5: To me, this section is extremely well written and meritorious of special attention. I assume that it is written in conjunction with Code sections 270.12 through 270.17 and also 270.37 & 38. Under section 270.11 it would (will) be possible to have all regulations inspected by the public with the exception of those documents which fall under the provision of 270.77. In regards to rule 270.77, I would hope that it would be removed or at least amended to allow public inspection. No informed or interested party could be accurately informed without access to such written records. In the long run it would save much time and effort if this regulation were dropped.

Code Regulation 3204: This concerns Surface Management Requirements and is directly concerned with environmental regulations. Allowance for public access to leased land-with due regulations-is noted. Regulations concerning: (1) pesticides-herbicides; (2) erosion control; (3) water pollution; (4) air pollution; (5) noise control; (6) sanitation and waste disposal; (7) aesthetics; (8) fish and wildlife; (9) historical sites, and; (10) restoration are also noted. Examination is given herewith:

- (1) pesticides and herbicides. Under P.L. 92-500, Section 104 (k) (1) (1), the Administrator of the Environmental Protection Agency is directed to issue regulations concerning water quality and pesticides. Whether this section of the Water Pollution Act of 1972 would apply in regards to geothermal storedwater is unanswered. Further, I have been unable to find any applicable standards of pesticidal useage is it might be enforced under the Geothermal Steam Act of 1970. Please clarify.
- (2) Erosion Control. This provides for minimizing damage of soil erosion and control to existing statues.

- (3) Water pollution. The question of whether geothermal operations cover all aspects of water pollution (construed to mean the possible utilization of water resources after completion of operations and/or abandonment of leased site) or only to the restrictions provided under public laws or regulations as the operation might affect other sources of water supply. Also, in the case of water quality standards and regulations, as the operations may affect other sources of water supply, the proposed geothermal regulations do not provide for halting work or construction in the case of inadequacy or inconsistent water standards as cited in P.L. 92-500, Section 303. More detail as to this provision should be given.
- (4) Air Pollution. As best I adjudge, this regulation provides maximum coverage.
- (5) Noise control. The Noise Pollution and Abatement Act of 1970 does not, to my knowledge provide for outdoor regulations. Further the Environmental Noise Control Act of 1972 provides for regulation of noises as supervised by the Administrator subject to state regulations (which are, from what I understand, extremely strong in some states.)
- (6) Sanitation and Waste disposal can be directly correlated to the Solid Waste Disposal Act of 1965 and amended by the Resource Recovery Act of 1970. This provision does not provide for exploration of new methods for re-cycling of waste. The supervisor, as defined in the proposed regulations, is answerable to various departmental and agency heads. Mention should be given as to provisions to guarantee different approaches to re-cycling of the waste and also making the supervisor responsive to the head of the EPA and various public groups. Also, some plan or rule should be cited as to stopping work in case of inadequate environmental safeguards. If such a plan is already in existence it should be cited.
- (7) Land subsidence-seismic activity. This rule provides for constant monitoring of seismic-land subsidence. Details are to be provided to the lessor. However, since this would probably include geological-geophysical data it would, possibly, be denied to the public under rule 270.77. Provisions should be made to at least allow this data to be inspected by the public. Further the rule, as written, only covers in a general manner seismic activity which might result from the use of nuclear small-yield explosions. I have only a general knowledge of Physics and an even more sketchy knowledge of geology-hydrology, however, I am aware of the possibility of earth tremors or seismic disturbances through the use of nuclear explosions, injection of untreated waste into the earth or construction along existing fault lines. Detailed and specific plans should be included to provide in this respect.

- (8) Aesthetics. No specific law or regulation is given or known to cover this aspect. Details of any such existing statute would be appreciated and would (sh~~h~~ould) be included in these regulations.
- (9) The provisions covering Fish and Wildlife, Antiquities, and; Restroations are covered under 43 C.F.R.; Parts 1-9239. I have copies of these volumms and will follow closely all developments in these fileds.

One final environmental regulation has, unfortunately been left out. That is the use and possibility of using nuclear technology or explosions. The case of Sierra Club v. Morton (40 U.S.L.W. at 4399-400, 3 ERC at 2042) limited citizen action to those where self-interest is concerned, not institutional issues or interest. Section 102 (2) (c) as incorporated into the National Environmental Policy Act of 1969 has been used to provide for the mentioning or inclusion of "responsible scientific opinion" on various issues (see 3 ERC 1126, 1 ELR 20469, 3 ERC 1126, etc.). Consideration, then, should be given in a specific manner, which would allow for direct citizen intervention as limited by or to these cases.

Code Regulation 3205.3-9: Which is concerned with Readjustment of proposed leases. It is stated that there will be a thirty (30) to sixty (60) day period of (for) bargaining of new terms after a 35 year period. There is not, to my knowledge, any rule or regulation which provides for suspension of operations during nogotions. As they may be interpreted in Subpart 3245-Termination and Expiration-there are several provisions for filing statements concerning use and management of leased land and possible restoration operation after such use is completed. In (b) of 3245.1 numbers (2) and (3) it is stated:

"... to place all wells on the land to be relinquished in condition for suspension of operations or abandonment... (3) to restore the surface resources in accordance with all regulations and the terms of the lease;

In my opinion, these are good terms. However, I believe that in accordance with the aforementioned sections in 3205.3-9 that it should be broadened to provide a complete suspension of operations during this period. There should also be provisions in this section which would allow public inspection during this period. However, it should be specific enough to provide for contingent factors such as societal needs, economic considerations for the public-workers factors, ecological-environmental conditions and other miscellaneous factor.

These comments are, at best, a laymen's analyst of needed rules. The one provision which I, and most environmentalist would favor in these rules is definite and specific proposals regulating the use of nuclear detonations or explosions. There might be some provision in the Atomic Energy register (10 C.F.R.) which covers in detail this area. If there is, it should be included or mentioned to allow interested parties to review it. If not such regulations and rules should be made and inserted into these rules. I am hopeful that they will be implemented and stated. Thank you again for allowing me to comment.

Sincerely

Alex M. Gray
520 North Palm
Little Rock, Ark. 72205

C-D-84

Gulf Oil Company - U.S.

EXPLORATION AND PRODUCTION DEPARTMENT

E. L. Petree
VICE PRESIDENT

P. O. Box 2100
Houston, Texas 77001

December 29, 1972

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

Revised Geothermal Leasing Proposal
and Operating Regulations

We are pleased to submit our comments and suggestions to the Department's Revised Leasing and Operating Regulations published on November 29, 1972. At the outset we wish to compliment you and your staff upon the improvements over the original proposal published on July 23, 1971. We are particularly pleased that you have clarified the matter of the Final Environmental Statement to be filed prior to any leasing and that you have more closely coordinated these regulations with the oil and gas leasing regulations. Our particular suggestions follow:

(1) 43 CFR 3203.2 - Lease Acreage Limitation. We again recommend that since a minimum acreage for each lease was not provided for by the Geothermal Steam Act of 1970, the number of acres be reduced from 1,280 to 640. If only 16 Federal leases could be held in a single state because of this minimum and the acreage limitation, it is obvious that much of the lease acreage would be mere "fringe" area requiring either a reduction in the pace and diversity of exploration or the inclusion of non-contiguous lease acreage with no definite limitation on the distance between tracts. Moreover, it would seem to complicate the process of administering the initial applications for leasing if numerous conflicts appear as the result of selecting a number of small non-contiguous legal subdivisions in a reasonably compact area. Finally, since the Department has already provided for an assignment of not less than 640 acres (//3242.1-1(a)), and since the Act provides for the relinquishment "of any legal subdivision of the area covered by such lease," (//10), it would seem that the Department's purpose in leasing large tracts only is unattainable.

(2) 43 CFR 3204.6 - Patented Lands. We recommend this sub-section be deleted in its entirety. The reason for this is that //14 of the Act states that a

C-D-85



lessee, subject to the other provisions of this Act, is entitled to use so much of the surface of the land as may be found by the Secretary to be necessary for the production, utilization and conservation of geothermal resources and by //3204.3, the surface of the land is protected, whoever may be the owner. We feel that since the terms and conditions of a lease when originally let need not be brought to the attention of the surface owner of such patented lands, the provision for notification of subsequent changes merely enhances the opportunity for frustration of the basic purpose of the lease. In connection with this point, there is, of course, an underlying assumption that nothing would be readjusted which would go beyond the government's reserved rights in using its reservation of geothermal resources, nor which would, contrary to the mandate of the Act, interfere with the protection of the surface of the land.

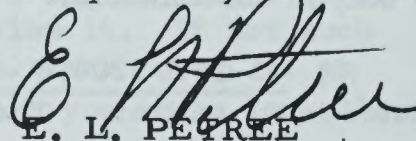
(3) 43 CFR 3205.2(b) - Service Charges -- Non-Competitive Lease

Applications. We recommend that the word "non-refundable" be taken out of this sub-paragraph or that if left in an exception be provided for a refund of the service charge if the application is rejected by reason of all of the leasable land becoming a known geothermal resource area after the application has been filed pursuant to //3210.4. In this connection, it might be appropriate to make a similar provision at the end of //3210.4 to the same effect.

(4) 43 CFR 3210.5 - Multiple Filings. We recommend the addition of a sub-section to be numbered and named as shown above patterned after 3112.5-2 of the oil and gas leasing regulations, but at the very least providing: "No applicant shall have an interest in more than one application covering the same lands or any portion thereof."

(5) 43 CFR 3244.3-2 - Requirements. We submit that the last sentence requiring that a unit agreement must be signed by or in behalf of all interested parties places an impossible burden on the party attempting to organize a unit because of the need to include all working and royalty interest owners. Our experience in oil and gas units has proven the reasonableness of obtaining sufficient executions to provide effective control of the area without the need to specify a minimum percentage. Not only is 100% commitment extremely hard to obtain under the best of circumstances, but it is entirely foreseeable that some parties might hold out, even against their own best interests, in order to sell their signatures when it becomes obvious that the 100% requirement works to such an end.

Respectfully submitted,


E. L. PEETREE

December 21, 1972

Geothermal Coordinator
Department of Interior
Washington, D. C. 20240

#27

RE: "DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT (43 CFR Parts 3000, 3045, 3104, 3200) 'GEOTHERMAL RESOURCES LEASING ON PUBLIC, ACQUIRED AND WITHDRAWN LANDS, REVISION OF PROPOSED RULE."
"DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY (30 CFR Parts 270, 271) GEOTHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED AND WITHDRAWN LANDS NOTICE OF PROPOSED RULEMAKING."
FEDERAL REGISTER, VOL. 37, No. 230-Wednesday, November 29, 1972

Dear Sir:

As a professional engineer, registered in Texas (P.E. No. 25307) and Louisiana (P.E.No. 10684) holding a current Nevada Well Driller's License (No. 648), I would like to make a few recommendations and comments about the proposed geothermal resource rules and regulations:

- I. Geothermal resources like oil, gas, helium, coal, minerals, water and other subterranean resources should be conserved, explored, developed, produced and marketed for the optimum ultimate good of all, especially the general public.
- II. The United States Department of Interior through the Bureau of Land Management and Geological Survey should have the authority to determine what, how, when, where and why these natural resources should be conserved, explored, developed, produced, processed, and marketed. A public advisory group should be selected to help determine these policies. This should prevent the assemblage of large blocks of government land to hold the enclosed resources till a future market makes the resource more valuable, as is now allowed by the U. S. Department of Interior rules and regulations.
- III. It is recommended that a minimum exploration and or development cost be required on an annual basis, possibly 10 percent of the total annual rental charge would be proper. All information obtained, such as logs, surveys, drilling data and core information should be open to the public. All U. S. Governmental leases should require full disclosure of any and all information.
- IV. All U. S. Government leases should have a development or drilling clause which requires beginning operations within a certain time, say two years, or the lease would be automatically cancelled and the acreage revert to the U. S. to be leased by others. The non-compliant lessee should not be eligible to lease the same acreage within two years after the reversion.
- V. The secrecy period, six months or whatever for withholding information, upon request of lessee, should be eliminated because the U. S. Department of Interior and the lessee are in effect only agents of

and representing the real owners (the general public). This open-file rule would make the Bureau and Survey office manager's job much simpler because all records would be open to the public. Presently certain files can be held for the future by government technicians and officials. Who has a better right to know how resources are managed, conserved, developed, produced and marketed than the general public? If a lessee is permitted to withhold information from the public on public land, who is being served? The public, the true owner, or the lessee who may be holding thousands of acres for future reserves when price increases make processed products more valuable.

- VI. The \$1/acre recommended annual rental seems appropriate except that it favors the "large bankroll." I would like to see the little guy get some breaks. Some of my friends are planning to form a corporation to explore for and develop geothermal energy resources in Nevada. This group would like to check U. S. Government land for geothermal "hot spots" by coring, temperature logging, infrared photography and other modern sophisticated scientific techniques. This group is quite willing to put up bond money and rentals for areas to be cored. However, since a hot flow may be stream-like (possibly miles long but only 100' to 500' wide), the cost of leasing thousands of acres could be prohibitive.
- VII. It is therefore recommended that some type of explorative program be considered which would permit traversing U. S. Government land, whether leased or not, to determine the presence of potential geothermal energy. If not leased, the explorer should be allowed to lease the area with the same development requirements. If leased, the lessee would be required to start developing the area within a reasonable time, possibly paying the exploration company a 3 percent override for proving the property. All such information should be open to the public with the lessee and explorer rights protected. In event the lessee elects not to develop or fails to initiate development within the permitted time, then the explorer has first right of lease. If the explorer fails to exercise this right, then the lease should revert to the U. S. subject to competitive leasing.

One area my friends would like to check offsets a private hot water well now producing 170°, low solids (under 250 ppm), water from a 50' depth. This area has no industrial development so exploiting geothermal energy would be beneficial to the area, State of Nevada and the United States economy.

In event a commercial geothermal energy strata was discovered this group would raise private money to develop and utilize the energy. Would not this be better use than to permit some company to lease thousands of acres and not develop it?

- VIII. Each fulltime staffed department office should have all information concerning its respective area on file and available to the public at that office.

It is rather frustrating and costly to check lease owners in Clark County, Nevada, since the Bureau of Land Management's Las Vegas office does not have a publicly available full set of maps and reportedly cannot obtain the same. The alternative is to go to the Reno State headquarters (450 miles from Las Vegas), pay someone in Reno a fee to look up the information; order maps at prices ranging from \$2 to \$72 per township, dependent upon leasing activity; or forget the whole thing. Since the office is supposedly working for the general public, the information should be available in the closest office. Another office, Riverside, California, has refused, as recently as last summer, to furnish maps by mail at all to a friend of mine.

- IX. Basically, I favor Senator Jackson's proposal of a Federal Energy Czar. Oil, gas, geothermal resources and other undeveloped minerals should be developed and used under his direction. Possibly environmental resource conservation and development should be under such a position.

Past U. S. resource development suggests that, under present rules, only the giant corporations or super-rich individuals can really successfully compete in the energy market. Although Nevada is underlain by geologically interesting sedimentary strata and there have been numerous shows of oil and gas in the many exploratory wells and despite the fact that at least ten major oil companies hold blocks of Federal oil and gas leases, to this date, no commercial gas well has been discovered (?) Or should the true word be produced? I say this with "tongue in cheek" because of past major oil company activity in Clark County Nevada and the recent Texaco venture in Lincoln County.

Just a few weeks ago Texaco drilled a "no dope hole" on United States lease Sec. 18 T. 12 S. Range 64 E. MDM Lincoln County, Nevada. Texaco now reports that the well was D & A at 7030' but logs and other information will not be released for six months. Texaco reportedly holds the approximate limit of acreage in the State of Nevada as do several other majors who have not drilled a well nor spent a dime to develop Nevada. Does Nevada owe them anything? What did Texaco do to help Nevada's economy? -- all Texaco personnel, drilling contractor (not Nevada licensed), and service companies were from outside Nevada. This despite the fact that highly qualified Nevada Tax paying firms and individuals were available -- possibly more knowledgeable as to Nevada drilling conditions -- who might have saved Texaco thousands of dollars and possibly completed the well.

Texaco is merely the latest. In 1959, Shell drilled a 5919' well in SW 1/4 Sec 5 T. 20 S. R. 66 E., Clark County, Nevada which Shell reported to be dry with no shows. Richfield, reported four good to excellent shows in the Triassic, Permian and Mississippian on this same hole. Shell and Standard took a large block of acreage after drilling this dry hole (?).

In 1966 El Paso drilled a 7080' wildcat in SE 5 Sec. 35 T. 23 N. R. 58 E. MDM White Pine County, Nevada. Although logs and shows looked very interesting, and although a high pressure wellhead was installed, the

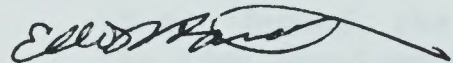
well remains untested to this time. An Independent, Fleetway Petroleum, Inc., is presently trying to raise funds to drill a test offsetting this temporarily abandoned well.

Why has no major drilled to basement in Clark County Nevada where gas zone was reported at 800' and oil at 1600' on the Arden Dome in 1933? Why has no exploratory money been allocated by the major oil companies to attempt to prove once and for all whether commercial quantities of oil and gas do or do not exist in Southern Nevada?

Did it make sense to drill a (tax deductible) 30,000' well in Oklahoma where reported bottom hole temperatures exceeded 400°F at an estimated cost of over 5.5 million dollars? An equal 5.5 million dollars could have, in my engineering opinion, drilled, tested and completed more than 25 wells to basement Pre-cambrian rock in Southern Nevada. Nearly every oil geologist and engineer that I have talked to, including many major oil company ones, have told me that they believe that COMMERCIAL OIL AND GAS ARE PRESENT IN NEVADA.

I realize this is a longwinded letter but I feel strongly about these matters and believe something should be done. I have been a drilling, production, and reservoir engineer for almost 30 years and was with Sinclair Oil and Gas Company for 18 of those, so I know a little whereof I write.

Very truly yours,



Ellis T. Hammett, Professional Engineer

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Las Vegas, Nevada 89107

Telephone: (702) 385-1291 - Office Ext. 214

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ETH:mm

cc Richard M. Nixon, President of the United States of America
Rogers Morton, Secretary, Department of Interior
William Ruckelshaus, Administrator U. S. Environmental Protection Agency
Alan Bible, United State Senator of Nevada
Howard Cannon, United State Senator of Nevada
David Towel, United State Representative, State of Nevada
Mike O'Callaghan, Governor of Nevada
Las Vegas Sun
Las Vegas Review Journal
Oil and Gas Journal
World Oil

ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS

#48

Washington, D. C. 20575

REFERRAL OF PROPOSED FEDERAL ASSISTANCE PROGRAM REGULATIONS UNDER
OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-85

ACIR Ref. No. 72-94

Date of Transmittal: 12/6/72

TO: Council of State Governments - National Governors' Conference
International City Management Association
National Association of Counties
National League of Cities - U. S. Conference of Mayors

SUBJECT: Department of Interior proposed
regulation or revision dealing with
Geothermal Resources - Leasing on Public,
Acquired and Withdrawn Lands

The agency needs the views, if any, of your organization
on this subject by 1/5/73.

Departmental Contact: Mr. Tom Friz

Phone: 343-7511

☐ We have already transmitted our views by direct
consultation.

☒ We have no comment.

☐ Our comments (attach additional copies if necessary)
are enclosed.

Please return copy of this form to agency: Mr. Everett T. Keech,
Director, Office of Management Consulting, Office of the Secretary,
Department of the Interior, Washington, D. C. 20240.

and one carbon each to the Advisory Commission on Intergovernmental
Relations and the Office of Management and Budget.

Laurence Rutter
Name

I. C. M. A.
Organization

ADVISORY COMMISSION ON INTERGOVERNMENTAL-RELATIONS

48

Washington, D. C. 20575

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Relations and the Office of Management and Budget.

Laurena Rutter
Name

I. C. M. A.
Organization

#54

KARL S. LANDSTROM
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June 5, 1973

Hon. Rogers C. B. Morton
The Secretary of the Interior
Washington, D.C. 20240

Action Office EGS
For info only

Dear Mr. Secretary:

I bring to your attention certain major errors which I believe have occurred in the preparation by your staff of the draft environmental impact statement (September 1971 and May 1972) for the geothermal leasing program. I urge that you have these errors fully investigated and that proper corrective action be taken before the final statement is submitted.

First, the draft erroneously holds out that the Secretary could decline to promulgate geothermal leasing regulations. This is not an alternative course of action available to the Secretary, who is required by mandatory language in Sec. 24 of the 1970 Act to prescribe rules and regulations for implementing the Act. Failure to issue regulations in a timely manner would amount to nonfeasance of office on the part of the Secretary.

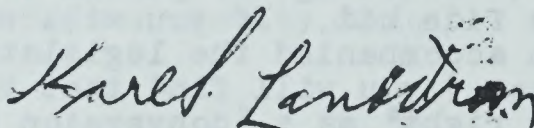
Second, the draft erroneously holds out that the Secretary could decline to issue any leases to develop Federally owned geothermal resources. This is not an alternative that is available to the Secretary insofar as "grandfather right" lands are concerned, because the 1970 Act has granted to the holders of such rights a right to have their applications processed pursuant to the provisions of the Act. In respect to "grandfather right" lands which are within a known geothermal resource area, the Act, in Sec. 4(e) states that such lands "shall be leased by competitive bidding . . ." allowing the person owning the right to meet the highest bona fide bid. If you will refer to the Senate Committee report which accompanied the legislation (S. Rpt. 1160, 91st Cong., 2d Sess.) you will find that the Committee described the "grandfather right" as a "conversion right," indicating that such right was circumscribed, but there is nothing in the report and nothing in the Act that I have seen that supports the notion, which appears to be involved in the draft impact statement, that such "right" can be arbitrarily turned away or cut off by Secretarial action. Your staff appears to have mistaken seriously the Act's provisions and its legislative history in this regard, to have erred in drafting the proposed regulations, and to have carried this error forward into the environmental impact statement.

Inasmuch as the "grandfather right" lands must be made available by the Secretary for leasing in accordance with the "conversion right" provisions of the Act, and no alternative is available to the Secretary, the making of such lands so available cannot be said to be a "major Federal action" within the meaning of NEPA

and the subject matter of the proposed leasing of such lands should be omitted from the environmental impact statement; or at least the statement should limit itself to such alternatives as are, in fact, available to the Secretary with respect to such lands, such as alternative levels or standards of environmental quality protective measures that might be incorporated into such leasing. It would seem to me, however, that such alternatives will not become sufficiently known until such time as the leasing of specific geographic areas of the "grandfather right" lands is proposed, after the leasing regulations have been promulgated. I believe it would be satisfactory, within the provisions of NEPA, to omit the "grandfather right" leasing program entirely from the environmental impact statement pertaining to non-"grandfather right" lands on grounds that no major Federal action which has not already been taken is now pending. Then the environmental impact statements could be submitted case by case as each of the "grandfather right" areas come up for proposed leasing.

The procedure that I have outlined above has obvious advantages from the standpoint of moving ahead with private exploration for and development of geothermal resources on the "grandfather right" lands so as to participate in a more timely way in the effort which has been called for by the President to avoid a more severe energy crisis. The procedure, I believe, corresponds with the provisions both of NEPA and of the Geothermal Steam Act, and it overcomes the errors which I have pointed out in the draft environmental impact statement.

Sincerely,



Karl S. Landstrom

JOSEPH W. AIDLIN

ATTORNEY AT LAW

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FILED
JAN 2 1973
#23

December 27, 1972

Mr. Reid T. Stone
Geothermal Coordinator
Interior Building, Room 7000
Department of the Interior
Washington, D. C. 20240

RE: Revised Regulations Regarding Geothermal Resources

Dear Mr. Stone:

I have reviewed the revision of the proposed regulations covering geothermal resources on public lands, published November 29, 1972 in the "Federal Register". Before commenting as to specific matters, I would like to state generally that I understand how difficult it is to frame for the first time regulations with respect to a newly developing resource as to which much has to be learned and much experience will have to be gained. For that reason I believe that it is not reasonable to expect that the proposed regulations will initially meet all problems and satisfy all points of view as to what will best encourage the rapid development of geothermal resources. While I have some suggestions to make which I believe will facilitate development of the resource and others which I feel are essential in terms of practical realities, as a whole those who have worked on preparation of the regulations have done an outstanding job with a difficult task.

I have limited my comments to items of substantial concern and importance, and in my view, the alterations hereafter suggested will be in the public interest in encouraging more rapid development of the resource and will meet certain practical problems which, if they are not resolved in due course, will present unnecessary difficulties to the developers of the resource. My comments as to specific items are as follows:

1. Section 3200.0-5(g). As to determination of a KGRA, I would suggest elimination of the entire portion

of the section beginning with the words "Existence of a few, usually two or three..." and insert in its place the following: "Existence within five miles of any outer boundary of a parcel of land of a well producing, or capable of producing, geothermal resources in commercial quantities shall be deemed to be a circumstance as to engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal resources in that area are good enough to warrant expenditures of money for that purpose and will cause that potential geothermal resources area to become a KGRA. Absence of such well or wells shall not, however, exclude an area from determination as a KGRA by the Geological Survey in due course of its activities."

The suggested change will establish a reasonable parameter for determination of KGRA lands, because the existence of geothermal leases are often based on speculative considerations rather than factual geologic considerations.

2. Section 3202.2-1(a). There should be added to this section a provision which will not charge an applicant with acreage covered by a lease application which is rejected. In other words, the mere count of acreage included in applications does not necessarily mean that the applicant will receive a lease on the acreage. To correct this, I suggest wording similar to the following: "In the event acreage limitations are exceeded, the applicant shall be required to agree that, in the event of the issuance of a lease or leases pursuant to such application, he will relinquish whatever leases may cover lands exceeding the acreage limitation."

This same problem occurs in Section 3210.2-1(e).

3. Section 3201.2(c). The last sentence of this section seems to me to contradict the earlier provisions of the section. In effect, the last sentence provides that co-lessees are to be charged with the total acreage, and that certainly is not the intent of the section. Therefore, unless another meaning is intended which is not clear in the present wording and unless such meaning is more clearly spelled out, I suggest that the last sentence beginning with the words "No holding..." be eliminated.

4. Section 3203.1-4: The paragraph at the end of this section should be called "(e)" so that it clearly refers to subdivisions (b) and (c) of this section. Otherwise, since it is not separately numbered, there might be some question as to whether or not the last paragraph refers only to subdivision (d).

5. Section 3204.1(e). In item (1), although the Lessee is obligated to monitor operations for seismic activity, this is a harsh and unrealistic requirement since the average Lessee will not have the equipment to monitor such operations and such monitoring is properly within the province of the Geological Survey. I suggest, therefore, that the reference to monitoring operations for seismic activity be eliminated.

This same provision appears in Section 270.43 of the operating regulations, and the same comments apply as to that section.

6. Section 3210.1. I feel that the provisions of this section defeat, for most practical purposes, the issuance of noncompetitive leases. This, of course, is a policy matter which will have to be determined by the Secretary of Interior based upon his understanding of the provisions of the Geothermal Steam Act. My view is that the Geothermal Steam Act contemplated the issuance of noncompetitive leases, and if my view is proper, then much of the wording of this section should be eliminated. I am not suggesting alternative wording, because the policy in this regard must first be determined by the Secretary.

7. Section 3210.2-1(d). In item (1) thereof most of the information required would not be available to an applicant for a lease. For example, until a lease is developed it would be impossible to designate proposed well locations with any accuracy. Additionally, the resources required to compile the information requested would be available only to very large operators, so that the smaller operator would be effectively precluded from being able to make a complete application.

In this regard I suggest that an application might include a topographical map or maps available from state or federal sources on which applicant shall note, to the extent of his information, present road and trail locations. The remaining information, including item (2) belongs properly in the proposed development program to be filed with the Supervisor after the lease has been issued.

In this same section in subdivision (e) the comments with respect to restricting chargeability as to acreage covered by applications made with respect to Section 3202.2-1(a) apply here.

8. Section 3210.3. In order to avoid any ambiguity as to the intent of this section, the period at the end of this section after the word "drawing" should be changed to a comma and the following words added: "subject to determination of priorities as otherwise provided for herein."

9. Section 3210.4. It does not seem to me that it was intended by this section that an application for a noncompetitive lease be rejected without reason. Therefore, I suggest insertion after the word "lease" and before the word "even" in the third line from the end of the section the following words: "because of non-compliance with the regulations".

10. Section 3220.4. In order to properly advise prospective bidders of the conditions of their bids in the event preferential rights exist, the period at the end of the section should be eliminated and the following words should be added: "and a statement of the party who has been granted a preferential right to meet the high bid, where applicable."

11. Section 3220.6. The word "or" has been inadvertently omitted before the words "regulations" and "as" on line five of the section; and for clarification purposes the words "invitation" and "covering the lands involving" should be stricken on line eight, continuing to line nine of the section; and after the word "bids" on line eight the words "shall cover" should be inserted.

12. Section 3242.1-1(c). The present wording of this section creates uncertainty as to the right of an Operator to operate with respect to the entire working interest, although owning less than the entire working interest. This is obviously not the intention of the section. To clarify this point there should be added after the word "of" and before the word "the" on the last line of this section the following words: "not less than". It appears to me that the intent of this section is to avoid multiple assignments of working interest to persons who are not charged with the operating responsibility. On the other hand, a bona fide Operator operates for the entire working interest, although he may actually have less than the entire working interest in the lease. These added words clarify what appears to me to be the true intent of the section and meets the requirements of the usual bona fide operating agreement between co-Lessees.

13. Section 3245.4. The 90 days within which to remove all materials provided for in this section may not provide sufficient time to remove substantial structures, such as power generating facilities. Therefore, the Supervisor should have discretion to extend the time for reasons other than adverse climatic conditions. I suggest adding after the word "conditions" on the fifth line before the end of the section the following words: "or other good cause."

My comments with respect to the Geological Survey (Operating) provisions are as follows:

1. Section 270.62. This paragraph is totally unrealistic in that it does not reflect what actually occurs with respect to the sale of geothermal resources for generation of electric power. A public or private utility buying the energy will negotiate an agreement which calls for a fixed price (and perhaps provisions for increase or decrease, depending on various factors). This is the amount received by the Lessee. If the Supervisor is given the power to compute royalty on a different basis, the Supervisor has the practical power to increase the royalty payable by Lessee, because the payment of the royalty percentage based on a price which is not received by Lessee does in effect increase the royalty. Aside from subdivision (a)(2), items (1) through (8) of subdivision (a) should apply only to geothermal production which is not used for the generation of electric power. I recommend that only subdivision (2) of subdivision (a) of the section remain, and that there be added to subdivision (2) the following words: "in an arm's length negotiated transaction)" and that the other items of subdivision (a) of said section be limited solely to geothermal production not utilized in the generation of electric power.

In my opinion, this is a critical matter which goes to the heart of the economic viability of developing geothermal resources. Unless this change is made, I can foresee considerable reluctance on the part of many persons who might otherwise be interested in entering the field.

2. Section 271.3. In the first line of page 25306 of the "Federal Register" in which the proposed regulations appear, the word "identified" is misspelled.

3. Section 271.12. In Article IV, paragraph 4.3 of the form of unit agreement, I suggest that there be added at the end of that paragraph the following words: "The

Mr. Reid T. Stone
Geothermal Coordinator
Department of the Interior

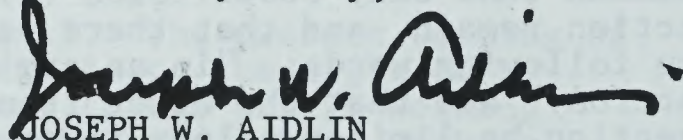
Page 6
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Supervisor may extend the period provided for herein upon the basis of a proper showing by the Operator." The purpose of this addition, giving the Supervisor greater discretion, is obviously not to prescribe a limited time period which may not be reasonable because of circumstances not within the control of the Operator and so as not to cause the contraction of a unit area precipitously if it is not in accordance with the best operating practice so to do.

In Article X, paragraph 10.5 of the form of unit agreement, there should be added at the end of the paragraph the following words after changing the period to a comma: "having due regard for Operator's obligations to the purchaser of the energy and the purchaser's requirements therefor."

As presently worded, the discretion vested in the Director is such that a utility company might very well be fearful that it cannot rely on a continuous amount of energy necessary to operate its facilities. A utility cannot rely entirely upon such arbitrary authority and will understandably be reluctant to construct generating facilities as rapidly as it might otherwise if there is due regard of its needs. (The use of the word "Director" is probably meant to be "Supervisor".)

Yours very truly,



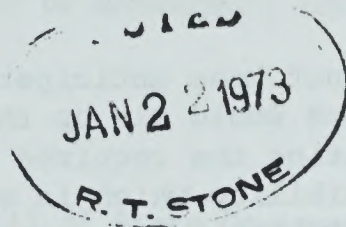
JOSEPH W. AIDLIN
General Counsel
MAGMA POWER COMPANY

JWA/mcm

Mobil Oil Corporation

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150 EAST 42ND STREET
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H. K. HOLLAND, JR.
EXECUTIVE VICE PRESIDENT
EXPLORATION & PRODUCING
NORTH AMERICAN DIVISION



January 11, 1973

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

Mobil Oil Corporation has reviewed the proposed regulations entitled "Geothermal Resources - Leasing on Public, Acquired and Withdrawn Lands; Revision of Proposed Rule," published in 37 FR 25282 (29 November, 1972) and "Geothermal Resources Operations on Public, Acquired and Withdrawn Lands," published in 37 FR 25300 (29 November, 1972).

The published revisions to the proposed regulations are represented as being made to accommodate Geothermal Resources. One of those revisions, however, will also affect public land oil and gas operations. Under Section 3045.1-1(a), as modified, in addition to filing the required "Notice of Intent," the prospective geophysical explorer must also receive "prior approval" before entering upon the public lands to conduct the intended exploration activities. Approval prior to entry is not required by the existing regulations.

This question of whether to require prior approval before entry onto public lands for oil and gas exploration operations was considered when the present regulations were adopted. Prior to the adoption of the existing regulations there was complete freedom of access for the purpose of conducting oil and gas exploration operations on the public lands. The provision requiring filing of a "Notice of Intent" was adopted as a compromise at the time the existing regulations were adopted. This has turned out to be workable for both the government and for industry.

Although geophysical exploration operations do not cause significant disturbances or harm to the public lands, the existing regulations and procedures make the explorer responsible for harm or damage resulting from his operations on public lands. At the same time the existing regulations make the public lands accessible to the prospective explorer and do not unduly restrict his operations. On-the-ground modifications in the exploration program are frequently required because of unexpected developments which indicate the need to utilize additional techniques or

January 11, 1973

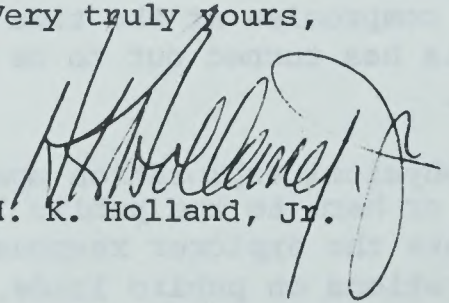
to enter lands the entry upon which had not been anticipated. To require approval prior to entry in such situations would tie up the explorers field personnel and equipment while awaiting the required approval. This would seriously limit the explorers flexibility which is so essential if the exploration operations are to be efficiently and successfully carried out.

The United States energy policy as spelled out in the Mining and Minerals Policy Act of 1970 declares it to be in the national interest to foster and encourage private enterprise in (1) the development of economically sound and stable domestic mining, minerals, metal and mineral reclamation industries, and (2) the orderly and economic development of domestic mineral resources. The statute declares that "minerals" includes oil and gas. If the domestic oil and gas industry is to remain economically sound and stable and if there is to be an orderly and economical development of the oil and gas resources located on the public lands, it is necessary that the public lands continue to be readily accessible for oil and gas exploration operations. Requiring approval prior to entry on public lands for exploration operations, as provided for in the revised proposed regulations, would limit the accessibility of public lands to potential discoverers of oil and gas deposits as well as geothermal resources and would hinder and slow down exploration operations on public lands by limiting the flexibility of the operator conducting such operations. Thus, requiring approval prior to entry could have a negative effect on the efforts of the oil and gas and geothermal resources industries in meeting the challenges of the energy crisis now confronting this country.

Mobil Oil Corporation therefore recommends that the requirement of prior approval before entry on public lands for geophysical exploration operations be deleted from the revised proposed regulations.

We appreciate having the opportunity to make our views known on these revisions to the proposed rules.

Very truly yours,



H. K. Holland, Jr.

ADVISORY COMMISSION ON INTERGOVERNMENTAL RELATIONS

Washington, D. C. 20575

#51

REFERRAL OF PROPOSED FEDERAL ASSISTANCE PROGRAM REGULATIONS UNDER
OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-85

ACIR Ref. No. 72-94

Date of Transmittal: 12/6/72

TO: Council of State Governments - National Governors' Conference
International City Management Association
National Association of Counties
National League of Cities - U. S. Conference of Mayors

SUBJECT: Department of Interior proposed
regulation or revision dealing with
Geothermal Resources - Leasing on Public,
Acquired and Withdrawn Lands

The agency needs the views, if any, of your organization
on this subject by 1/5/73.

Departmental Contact: Mr. Tom Friz

Phone: 343-7511

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- (☒) We have no comment.
- () Our comments (attach additional copies if necessary)
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Please return copy of this form to agency: Mr. Everett T. Keech,
Director, Office of Management Consulting, Office of the Secretary,
Department of the Interior, Washington, D. C. 20240.

and one carbon each to the Advisory Commission on Intergovernmental
Relations and the Office of Management and Budget.

Larry Maake
Name

National Assn of Counties
Organization

ADVISORY COMMISSION ON INTERGOVERNMENTAL-RELATIONS

Washington, D. C. 20575

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Name

John Gunther
Executive Director

U. S. Conference of Mayors

Organization



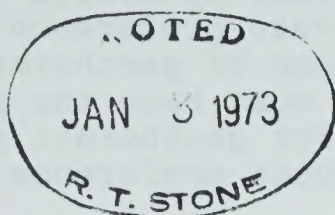
NORTHWEST PUBLIC POWER ASSOCIATION

113 W. FIRST STREET

VANCOUVER, WASHINGTON 98660

PHONE 206/694-6553

#30



December 27, 1972

The Honorable Rogers C. B. Morton
Secretary of the Interior
Department of the Interior
Washington, D. C.

Action Office Reid Stone
For info only Rm. 7000

Dear Mr. Secretary:

We have reviewed the proposed rules for leasing of geothermal resources on public lands as published in the Federal Register of Wednesday, November 29, 1972, and wish to make the following comments upon those proposals.

We believe that geothermal resources underlying public lands are public resources which belong to the people of the United States. The right of private exploitation of such public resources for private gain should be granted only as such development is proved to be in the public interest and under conditions which assure that the people can reclaim their resources for public use in accordance with procedures which protect the private investment.

The Board of Trustees of the Northwest Public Power Association, therefore, voted unanimously on December 13, 1972, to request that the proposed rules, Part 3200-Geothermal Resources, Leasing, be amended to provide:

1. Preference to states and municipalities in issuing leases for geothermal exploration and production similar to the preference provisions for hydroelectric site permits as established by Part I, Section 7 of the Federal Power Act as amended.
2. Recapture rights by the public of geothermal resources and projects, similar to those for hydroelectric projects as established by Part I, Section 14 of the Federal Power Act as amended.
3. Preference to public bodies in the issuance of new geothermal leases upon the expiration of the original private leases similar to the provisions for hydroelectric license procedures established by Part I, Section 15 of the Federal Power Act as amended.

The Hon. Rogers C.B. Morton
December 27, 1972

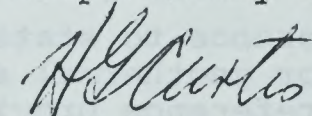
The Northwest Public Power Association, by motion of the Board of Trustees, protests the private preference granted by Sub-Part 3203.1-3 governing reissue of geothermal resources leases on public lands. The public must have the right to recapture its geothermal resources for geothermal purposes as well as for other purposes, and private preference is questionable public policy.

The suggestions we make for amendment of the proposed rules to provide public preference and recapture provisions, similar to those for hydroelectric sites as established public policy under the Federal Power Act, should give private lessees assurance of adequate return on and protection of their private investment.

Other than the exceptions noted above, we find the proposed rules for leasing of geothermal resources on public lands to be generally satisfactory and in the public interest. We believe private exploration and development of geothermal resources as a means to help alleviate the nation's energy problems is desirable and should be encouraged in accordance with sound public policy in the management of public resources.

The Northwest Public Power Association represents 120 public and cooperative electric systems of Alaska, Idaho, Montana, Oregon, Washington and British Columbia. Our members serve a majority of the people of these five states and one province. We respectfully request that you consider our comments in establishing the necessary rules, regulations and procedures for leasing of public lands for development of the public's geothermal resources.

Respectfully submitted,



Henry G. Curtis
General Manager

HGC:dg



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Pacific Energy Corporation

4676 Admiralty Way
Los Angeles, Ca. 90291
Telephone (213) 822-1550

December 22, 1972

Dr. Robert W. Rex
Vice-President — Exploration

Mr. Reid T. Stone
Geothermal Coordinator
Room 7000
U. S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Stone:

I would like to comment on the geothermal federal regulations.

Section 3201.1-6 Excepted areas contains under (b) a statement that leases shall not be issued for lands which are within a national recreational area. This particular disclaimer is in direct conflict with commitments which many of us in the geothermal industry feel have been made by Secretary of the Interior Rogers Morton that there will be joint development of recreational areas for multiple use specifically including geothermal resources. Furthermore, it is a peculiar twist of logic when the basic bread and butter needs of a nation for energy are excluded when the luxury of recreational use of potential geothermal areas is given priority. It is totally incomprehensible to me how this exclusion of geothermal development from recreational lands could be allowed to stand. I think it is one of the worst features of the entire proposed set of regulations as they stand and think that it should be stricken out as an exclusion.

The Atomic Energy Commission is arguing in the hearings that they hold on licensing nuclear reactors that geothermal energy is of no importance because there are insufficient potential geothermal sites to make a significant contribution to the energy resources of the United States. The argument that they advance is based primarily on the lack of a large number of known geothermal producing areas. It seems very much against the U. S. public interest to prevent geothermal development in areas which are not national parks and wilderness areas. I am completely in agreement that we need to preserve certain wilderness and park areas from any public development including, in my opinion, excess tourism. However, it is also important that the nation have an indigenous energy resource base and geothermal energy is one of the cleanest potential major sources of energy for the country. There are a number of potential or actual recreation areas either established or under consideration that are prime geothermal prospects. Because of the competitive nature of the industry, I would rather not identify them specifically at this time.

Nevertheless, I wish to go on formal record that this particular exclusion is totally incompatible with either logic in terms of national priorities



Pacific Energy Corporation

Mr. Reid T. Stone
December 22, 1972
Page 2

or commitments that many of us feel Secretary of the Interior Rogers Morton made at the time of establishment of the desert recreational area on the east side of the Imperial Valley. Not only this recreational area but others either under consideration and in the planning phase by various branches of the federal government as well as those proposed by some recreational groups have substantial geothermal potential. In particular, the Cascade volcanoes probably represent a greater value for their energy potential than they do for lumber.

Another section which I think is unreasonable is the acreage restriction per state. I think that a much more reasonable figure than thirty-two sections would be approximately fifty sections per company allowed per state. I would, furthermore, suggest that the emphasis be shifted from strict regulation of acreage per state to some overall national maximum so that the state figure would be adjusted perhaps so that in any one state approximately 64,000 acres would be allowed per company but that the sum national total could not exceed 640,000 acres. The main reason for this is that commitments to utilities require blocking out substantial areas in order to locate potential resources followed by exploration and development which will take many years. This means that any company will be excluded from developing more than one or two prospects per state if the present regulations hold and this will slow down the overall resource development in the United States. Furthermore, binary fluid plants, hot dry rock systems, and supernormal pressured geothermal resources will require very substantial amounts of land, much larger in extent than conceived under the present regulations. For that reason I think it is important that the allowable area held by any one geothermal developer be increased substantially.

Thank you for the opportunity to comment on the federal regulations.

Sincerely yours,

ROBERT W. REX

RWR:cw

#24

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

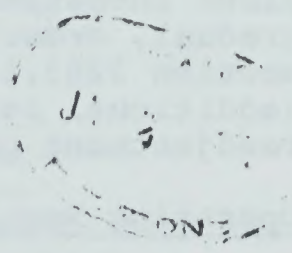


77 BEALE STREET • SAN FRANCISCO, CALIFORNIA 94106 • (415) 781-4211

FREDERICK T. SEARLS
VICE PRESIDENT AND GENERAL COUNSEL

December 28, 1972

Mr. Reid Stone
Geothermal Coordinator
Room 7000
U.S. Department of the
Interior
Washington, D.C. 20240



Dear Mr. Stone:

Pacific Gas and Electric Company's comments on revisions to the Geothermal Regulations for leasing and operating on public lands are hereby forwarded.

We are concerned that, with few exceptions, our previous comments of November 19, 1971 are not reflected in the presently proposed version of the regulations. As we said, it is unnecessary to add further environmental regulations in view of presently existing Federal and State regulations as this would only add further and costly delays and the overlapping of jurisdiction would only lead to confusion. This is not to say that environmental protection measures are unimportant, but our experience points out the necessity for a balanced view that includes the real need for latitude in effective development. Our experience as pioneers in the development and utilization of geothermal energy indicates that the proposed regulations would unreasonably handicap development of this desirable resource.

Also, and perhaps more important, is the distinct possibility that the economic competitive edge of geothermal energy might be lost in meeting the maze of regulations. We urge you to review again the comments forwarded on November 19, 1971, a copy of which is attached hereto.

We particularly invite your attention to several areas of the proposed regulations that we feel would discourage investment in plants and purchase of steam:

December 28, 1972

Subpart 3204 - Surface Management Requirements,
Special Requirements

Section 3204.3 Readjustment of Terms and Conditions

The readjustment of "the terms of any geothermal lease" at not less than 10 year intervals, as determined by the authorized officer, is not consistent with power plant investment and long range planning necessary for gradual, orderly field development. PGandE, while not opposing section 3203.1-2 (primary leasing term) and section 3203.1-3 (additional term), recommends that the ten (10) year lease readjustment provision of section 3204.3 be deleted.

Operating Regulations

Sec. 270.80 Noncompliance with Regulations or Lease Terms

The revised version gives the Supervisor authority, without giving any notice to "shut down operations which he determines are unsafe or are causing or can cause pollution." The thirty day notice provided in the original version has been deleted, and no set number of days notice is required by the revised regulations. This provision is all-inclusive; it includes the innocent as well as the willful violator. More importantly it allows the Supervisor, in his sole discretion to close down an entire operation. Exercise of such unilateral and arbitrary authority could cause irreparable harm. We do not foresee conditions which would justify such action. We recommend that in these cases a hearing be granted and that this section be reverted to its original language which allowed a thirty day notice.

We appreciate the opportunity to present these comments to you.

Sincerely,

F. T. Searls

FTS:co
Attachment

PART I

Comments on
September 1971 Draft Environmental Impact Statement
for the
Geothermal Leasing Program

1) Under the heading of Production Testing the following statement appears on page 18:

"Venting of steam to the atmosphere can create an adverse environmental impact if the steam contains large amounts of noxious gases, such as hydrogen sulfide. When such gases constitute a significant adverse effect, removal would be required (Appendix B, Section 270.41)."

At present there is no demonstrated method for removing hydrogen sulfide from steam at the wellhead on a well-by-well basis. PG&E recommends that the referenced portion of page 18 be revised as follows:

"Venting of steam to the atmosphere can create an adverse environmental impact if the steam contains large amounts of noxious gases, such as hydrogen sulfide. The rate of release of such gases would be regulated to prevent significant adverse effects to the environment (Appendix B, Section 270.41)."

Under the heading of Power Plant and Powerline Construction PG&E recommends that the above two sentences be substituted for the last paragraph on page 26.

Under the heading Gaseous Emissions in Appendix C, page 16, line 18, PG&E recommends that the phrase "the rate of release of such gases would be regulated to prevent significant adverse effects to the environment" be substituted for the phrase "the noxious gases would be removed prior to atmospheric discharge."

2) Under the heading of Production Testing the following sentence appears on page 21, lines 2-4:

"If toxic substances such as boron, sulphides, methane fluoride, selenium and others were present in such releases, they also would exert adverse impacts."

Neither the numerous analyses of geothermal fluids performed by PG&E laboratories and by contract analytical laboratories for PG&E, nor the analyses reported on page C-5 and in Appendix F, list selenium. While some dissolved methane would be expected in waste geothermal waters from the cooling towers, methane is not reported as toxic to fish. Therefore, PG&E recommends that these two materials be deleted from line 3 of page 21.

3) As discussed on pages 38, C-16, C-17, and C-35, landscape and vegetation are affected by road building and site preparation, but these effects can be minimized by proper techniques. Therefore, PG&E recommends that the first paragraph on page 27 be modified as shown below:

"It would be required that all access roads, including those related primarily to power generating and transmission facilities, be designed to conform to existing local standards to the extent practical; and plans would include provision to prevent them from becoming sources of airborne dust, as provided in the general provisions of the leasing regulations (Appendix A, Section 3200.0-6(b))."

Likewise, the above wording should be inserted before the last sentence in the second paragraph in line 11 on page 22.

PG&E also recommends that the first complete sentence in lines 1 and 2 on page C-17, "This practice generally has little detrimental effect on the plant life.", be replaced by the following sentence: "The effects of this practice on plant life can be minimized by proper design and technique."

4) Under the heading Production Testing Phase on line 18, page 38, PG&E recommends that the following two sentences be inserted:

"Land subsidence resulting from fluid removal is manifest primarily in areas underlain by poorly indurated, generally young, sedimentary rocks, and

recent alluvial soils. Terrain underlain by ancient rocks, generally well indurated and hard, as well as igneous and metamorphic types, rarely suffer land subsidence related to fluid removal."

As discussed on pages 28 through 30, land subsidence or increased seismic activity is a potential (emphasis added) impact, but has not been observed at The Geysers. Therefore, PG&E recommends that the word "potential" be inserted between the words "new" and "adverse" in line 8 of page 38; and the word "possible" added between the words "such" and "effects" in line 8, page C-24.

5) The relative impacts of fossil, geothermal, and nuclear power plants on the environment have not been clearly established or documented. Therefore, PG&E recommends that the phrase "which could have greater impact on the environment" on the last lines of page 41, the last sentence on page 43, and the phrase "and generally have greater adverse environmental impacts" on the last line of page C-37, be deleted.

6) The phrase "of electricity were generated in" on page C-4 should be replaced by the phrase "of electrical generating capacity were installed by."

7) Douglas fir should be added to the vegetation list on page C-7.

8) PG&E and the developers at The Geysers are aware of the possibility of mishaps caused by landslides at The Geysers and consider such possibilities during construction planning. PG&E therefore recommends that the middle paragraph on page C-23 be modified as follows:

"Another potential hazard that poses special problems vis-a-vis geothermal development in the Clear Lake - Geysers area is that of landslides. The drilling and production do not cause landslides, but rather landslides can seriously hamper operations and could conceivably result in casing rupture and perhaps uncontrollable escape of steam. The mountainous lands underlain by rocks of the Franciscan Series (most of the area) are the most susceptible, and landslides are

most likely to occur during wet weather when rainfall increases the soil weight above the unstable slide surfaces. Major landslide areas at The Geysers, along Big Sulfur Creek, are well mapped and are geomorphic features several hundreds to thousands of years old. They are a result of slope instability brought about by uplift of the Mayacamas Mountains. They are known areas of past instability and are cognizantly considered when planning well locations, steam transmission lines, power plants, and electrical transmission. Construction activity has created new areas of shallow slope instability of minor extent; however, they are monitored and repaired as necessary to provide both plant protection and public safety. The most effective preventative measure is to provide soil drainage in susceptible materials to prevent saturation of soil and underlying rocks. To the extent that grading provides such drainage, it tends to minimize the landslide problem; but large fills tend to aggravate the problem unless special techniques are used, including selective areas for fill, notching of fills into original ground, and special drainage designs."

9) PG&E recommends that the phrase "in the immediate area of roads, well sites and other installations" be added after the word "activity" on line 12, page C-25.

10) Both the geothermal steam and condensate are corrosive to some materials. Therefore, PG&E recommends that the second paragraph on page C-27 be replaced by the following paragraph:

"Both the steam and steam condensate at The Geysers are corrosive to some metals. Therefore, materials of construction must be selected for each corrosion environment that occurs. Minor leaks could occur due to corrosion, but should not result in any special hazards."

11) Some noncondensable gases are discharged along with water vapor from the cooling towers at The Geysers; therefore, PG&E recommends that the phrase "but contains no noncondensable gases" be deleted from lines 4-5, page C-29.

12) In line 16, page C-34, the first word, "metamorphic", should be changed to "sedimentary" since the reservoir rock is Franciscan greywacke, which is sedimentary.

13) After line 6, page C-35, PG&E recommends adding the following paragraph: "Land subsidence at The Geysers has not been experienced to date. Power plant elevations have been checked on a periodic basis for subsidence monitoring."

14) The fifth paragraph on page C-36 states: "Geothermal production may include seismic activity and cause land subsidence." Since this statement is under the heading ADVERSE IMPACTS WHICH CANNOT BE AVOIDED and since neither land subsidence nor increased seismic activity has been experienced at The Geysers, PG&E recommends that this paragraph be deleted.

PART II

Comments on Appendixes A and B Proposed Rule Making on Geothermal Resources Leasing and Operation on Public, Acquired and Withdrawn Lands

§3200.0-3 "Interest in Lease"

It would be desirable to clarify the definition of this term to show whether, under a contract for purchase of geothermal steam or other geothermal products, the buyer has an "interest". The California Legislature has recently amended a similar California law to provide expressly that:

"A purchaser of geothermal resources pursuant to a sales contract approved by the State Lands Commission shall not be deemed to have a direct or indirect interest in geothermal leases or permits." (S.B. 716, signed August 2, 1971, ch. 431)

Such clarification, and exclusion of purchasers as holders of interests, could be very important to geothermal development. First, clarification will eliminate an unnecessary element of uncertainty. Secondly, in some areas only one utility may have the financial and system resources necessary to utilize

geothermal steam.* For example, PG&E has about 15,000 acres under contractual commitment (only a small portion of which are actually productive), and yet by 1975 it will have only about 600 Mw of generation installed in the entire area.

Moreover, it would be desirable to provide that performance security provisions, such as allowing a purchaser to act as the lessee's operator in the event the lessee defaults, should also be excluded as an "interest". Such provisions are merely intended to give the purchaser some assurance that the lessee's performance will be forthcoming, which is of course a necessity for a public utility purchaser.

§3201.2 "Acreage Limitations"

As discussed above, depending on the interpretation of §3200.0-3, "interest in lease", the 20,480 acre limitation may effectively hinder, rather than promote, the orderly development of geothermal resources on government lands. Moreover, although PG&E is not experienced in natural resources exploration, a 20,000 odd acre limitation seems unnecessarily restrictive. As an example, PG&E's three steam suppliers at The Geysers have about 15,000 acres leased in that area and not all these are productive. This would indicate that a developer may find itself effectively limited to exploration in but one field per State if a 20,000 acre limit is imposed.

§3203.1-3 "Additional Term"

The maximum term of the lease appears very inflexible. PG&E's experience at The Geysers indicates the need for a gradual development of a new geothermal field. The utility must "feel its way" in determining the reliability of the field and then must factor the field into its long-range

*Reservoir mechanics of geothermal steam fields is still in its infancy. This raises reliability questions and utilities without strong conventional reserves may find geothermal generation too risky during this initial development phase.

planning. Gradual development is desirable for orderly field development. The long period required for development of geothermal fields and possibility of a protracted period for reviews before state utility regulatory bodies may not leave a sufficient period of time to amortize the very sizeable investments required for plant and transmission facilities under the proposed lease terms. PG&E recommends that the lease term be related to generating units, or industrial plants if other usage develops, as they are completed.

§3204.1-(c)(2) "Water Pollution"

This paragraph specifies, in part, that "Toxic materials shall not be released into any lake, water drainage, or underground water." Since toxic materials are frequently found in geothermal waters, the above is not consistent with the technique of disposing of waste geothermal products by reinjecting them back into the geothermal reservoir itself. Our experience at The Geysers indicates that under proper conditions reinjection can be an attractive solution to potential water pollution problems. Moreover, in the case of very briny hot water, reinjection may prove to be the only practical way of disposing of effluent. PG&E recommends that the sentence "Reinjection of waste geothermal fluids into a geothermal reservoir shall be permitted under controlled conditions." be added at the end of paragraph (c)(2) of Section 3204.1.

§3204.1(e) "Aesthetics"

This paragraph specifies that aesthetics be taken "into account in the planning, design, and construction of facilities on the leased premises." With respect to power transmission facilities, to the extent that aesthetics are considered an environmental impact, this regulation conceivably would duplicate existing Department of the Interior (Bureau of Land Management) regulations (Title 43, Chapter II, Subchapter B, Part 2850) which specify

various environmental conditions for transmission rights-of-way granted across public lands. PG&E recommends that this paragraph exclude considerations of aesthetics of transmission facilities which are covered by other regulations.

§3204.3 "Readjustment of Terms and Conditions"

See testimony (copy attached) for PG&E comments on this paragraph.

§3211.2 "Application"

Paragraph (d) of this section specifies, in part, that an applicant make a narrative statement describing measures to be taken to prevent or control pollution of surface and ground water. PG&E believes existing provisions of the Federal Water Pollution Control Act would adequately protect surface and ground water quality at geothermal developments on federal lands, and to this extent the proposed regulation duplicates the jurisdiction of other federal laws and regulations. PG&E recommends that "pollution of surface and ground water" on lines 13 and 14 of paragraph (d) be deleted.

Further, as presently drafted, this section could require an applicant to include information and details about proposed geothermal development facilities, including power plant and transmission, that he simply could not predict until after actual discovery of steam. This regulation should be modified so that an applicant would not be required to submit information that would of necessity be based on speculation.

3242.1-1(a) "Record Title Assignments or Transfers of Leases or Undivided Lease Interests"

This paragraph does not make clear whether a utility purchaser may be assigned surface rights for construction of power facilities. Also, if such rights may be assigned, it is not clear whether they may be less than 640 acres or if they are to be considered joint with the producer. Five to

ten acres of land should be sufficient for a generating plant and switchyard, and relatively few acres may be required for a transmission corridor. PG&E submits that the producer should be given a permit for surface use at the time it receives its exploration permit, and that all or part of the surface use permit should be assignable to the party which will ultimately purchase and use any geothermal energy which is found.

3243.4 "Noncompliance with Regulations or Lease Terms"

Cancellation of a lease for noncompliance with regulations or lease terms seems to vest unnecessary and undue authority in the authorized officer. No utility could prudently make major investment in plant, and consider such plant reliable, under such a provision. The federal government could retain the protection it seeks with less stringent regulations in this regard. There is no reason why civil remedies, enforced either administratively or judicially, would not serve well for such protection.

§3243.5 "Removal of Material and Supplies Upon Termination of Lease"

The 90 day removal period after expiration of a lease may impose an unfair burden on the utility which owns large power generation facilities which it may wish to remove. PG&E recommends that the 90 day period be revised to 270 days, with the possibility of obtaining additional time for good cause shown.

3245.2-1 "General, Automatic Terminations and Reinstatements"

As now drafted this provision could result in an unfair penalty on a utility purchaser by virtue of a steam supplier default over which the utility may have little or no control. See also our comment on Section 3243.4. PG&E recommends that this section be modified to include provisions for a grace period during which time a utility purchaser could arrange to remedy a rental

payment failure by the lessee or seek other remedy prior to actual termination of the lease. In this way a utility will have an opportunity to protect itself in its contractual arrangements with its suppliers.

§270.16 "Royalties and Other Payments"

In the event a steam producer is selling steam to a utility purchaser, such as PG&E's present arrangements at The Geysers, the provisions of this section should require that any determination of the value of electric power produced include consideration of the constraints imposed by the market place (especially, cost of other forms of energy), cost of service and agreements negotiated at arms length between steam producer and purchaser and other affected parties.

§270.30(b)

This paragraph specifies, in part, the precautions to be taken by the lessee in matters of environmental effects. PG&E believes that compliance with the National Environmental Policy Act of 1969 would provide environmental protection. PG&E recommends that "(4) any environmental pollution or damage" on lines 7 and 8 of this paragraph be deleted.

§270.41 "Pollution"

The opening sentence of this section states: "The lessee shall not pollute the land, water, or air; pollute streams, damage the surface or pollute the underground water of the leased or other land." It would be literally impossible for geothermal development, or, indeed, any development, to comply with this provision in its strictest sense. The section goes on to state: "Federal and State air and water quality standards will be followed unless more stringent standards are stipulated by the Supervisor." PG&E believes the Supervisor should not be authorized to stipulate more stringent

standards if the lessee is in compliance with existing or future federal and State air and water quality requirements. Moreover, the subject of pollution abatement is covered in more detail elsewhere in the proposed regulations (refer to §3204.1(c)). PG&E recommends that §270.41 "Pollution", be deleted.

* * *

General

PG&E emphasizes that geothermal technology is still relatively new and that a considerable degree of flexibility is required in the administration of leases. The Public Land Law Review Commission recognized this in its June 20, 1970, Report to the President ("One Third of the Nation's Land").

"Geothermal resources may well require tailored acreage limitations and flexible provisions relating to terms and conditions. Acreage limitations and guidelines for readjustment of terms and conditions in geothermal resources leases should be established with due regard for the nature of the resource." (Page 136, Emphasis as per Report)

As an example of the need for flexibility, it may take many years to develop fully a geothermal steam field. Unless the duration of leases can be related to individual units in the later stages of development of a field, there may be insufficient lease term remaining to amortize a new unit.

#47

PETRO
LEWIS



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Denver Colorado 80202

Telephone 892-6010
Area Code 303

Petro-Lewis Corporation
Oil and Gas Producers

Stone
20m

January 24, 1973

Mr. Reid Stone
Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Dear Mr. Stone:

Please refer to the Proposed Rule Making for the Department of the Interior, Bureau of Land Management, Geothermal Resources, Part II, Leasing on Public, Acquired and Withdrawn Lands, Revision of Proposed Rule dated November 29, 1972.

I have discussed with several officials Paragraph 3210.2-1, Application part (d) which requires under (d) (1) and (2) and the second paragraph the submission of future plans upon a lease.

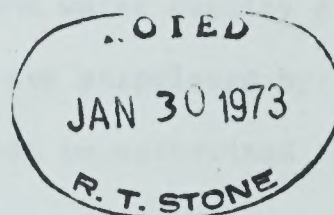
The requirement for such information at the time of submitting an application will result in the preparations of plans for exploration and development by numerous applicants in a situation where only one applicant can be successful. In addition, should the successful applicant fail to obtain the exact area upon which his plans were formulated, the original plan will have to be redone to meet the changed conditions.

May I suggest that these provisions be deferred until such time as the successful applicant proposes to do some exploration or active work upon the leases. This would conform to present practices for oil and gas leases.

Yours very truly,

H. C. Bemis.

H. C. Bemis





PHILLIPS PETROLEUM COMPANY

BARTLESVILLE, OKLAHOMA 74003

918 336-6600

EXPLORATION AND PRODUCTION DEPARTMENT

December 27, 1972

Re: Revised Geothermal
Leasing Proposal

Geothermal Coordinator
Room 7000
U. S. Department of the Interior
Washington, D. C. 20240

Attention: Mr. Reid T. Stone

Gentlemen:

In accordance with your invitation for comments, suggestions or objections to the proposed revised geothermal leasing and operating regulations as set out in Parts II and III of the November 29, 1972 Federal Register, Phillips Petroleum Company offers the following comments and suggestions for your consideration.

(1) 3200.0-8 Use of Surface

This section provides in part that any use of the leased lands for a power generation plant or a commercial or industrial facility will be authorized only under a separate permit issued by the appropriate agency for that specific use and subject to all terms and conditions which it may include in that permit.

Since environmental impact studies and resulting statements will probably be prepared prior to leasing, particularly in KGRA areas, the terms and conditions that need to be included in any permit contemplated by 3200.0-8 can be and should be set forth in the notice of sale or in the lease itself with the proviso that either a permit is not required or that the terms and conditions of the permit will not vary in substance from the terms and conditions set out in the sale notice or lease. We believe that a prospective bidder or applicant is entitled to know the terms and conditions of the entire "deal" when he desires to bid on offered acreage or applies for a lease. The proposed regulations should so provide.

(2a) 3201.2 Acreage Limitation

The first sentence of this section provides that "No person, association, corporation, or municipality shall take, hold, own

or control at one time, whether acquired directly from the Secretary or otherwise, any direct or indirect interest in Federal leases in any one state exceeding 20,480 acres."

Section 3202.2-1 General (a) provides that "Each applicant for a lease is required to submit with his application a statement that his interests, direct and indirect, in federal geothermal leases and applications, do not exceed the acreage limitations prescribed in 3201.2, "

Section 3220.2 Nominations (4) requires a statement of the interests, direct or indirect, held in other federal geothermal leases or nominations in the same state.

We believe the above 3 sections should be clarified to spell out whether applications and nominations are counted in determining chargeable acreage.

(2b) Section 3202.1 Who May Hold Leases

The first sentence of section 3202.1 states in part that "Leases may be issued only to: . . . (d) governmental units, including, without limitation, municipalities."

We note that the term "governmental units" is excluded from 3201.2 (a). If "governmental units" are entitled to hold leases, they should be subject to the same acreage limitation as imposed on others.

(3) 3202.2-4 Evidence Previously Filed

Section 3202.2-3 attorney-in-fact requires that if an application is filed by an attorney-in-fact, it must be accompanied by evidence of his authority. Section 3202.2-4 allows reference only to statements previously filed.

We believe that 3202.4 should also permit reference to evidence previously filed. To clarify 3202.2-4, the words "or evidence" should be inserted after the word "statements" in the first line of 3202.2-4.

(4) 3203.1-3 Additional Term & 3203.1-4 Extensions

Reference is made to geothermal steam and the production of geothermal steam in governing the extensions of leases. There is no definition as to what constitutes "geothermal steam". There is a definition of what constitutes geothermal resources and we believe that the term "geothermal resources" should be substituted for the term "geothermal steam" in order to clarify what products must be produced in commercial quantities for the purpose of extending the lease.

(5) 3205.3-2 Payment of Annual Rental

Is the amount of rental to be determined on an individual lease basis? If so, how is it to be determined?

This section as written seems to imply that the amount of the rental shall be determined on an individual lease basis. If this is so, one lessee could have a larger rental on his lease than another lessee and yet both lessees be holding "wildcat acreage." This aspect does not seem fair and it is our view that the amount of rentals for non-competitive leases should be fixed in the regulations and apply to all non-competitive leases.

(6) 3205.3-5 Royalty on Production

Is the amount of royalty to be determined on an individual lease basis? If so, how is it to be determined?

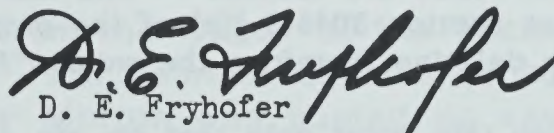
This section as written also seems to imply that the amount of royalty shall be determined on an individual lease basis. If this is the case, two or more leases on "wildcat acreage" held by different lessees could have different royalty rates. This does not seem fair to us and it is our view that the amount of royalty for non-competitive leases should be fixed in the regulations and apply to all non-competitive leases.

(7) 3242.9 Effect of Assignment

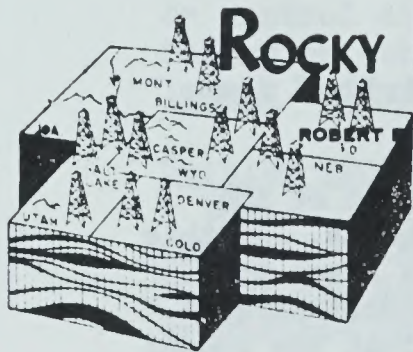
The situation where an assignment is made of an undivided interest in a part of the lands covered by a lease is not covered by this section. It is suggested that this section should specifically provide that such an assignment shall not segregate the lease.

We appreciate the opportunity to make these comments and suggestions and if we may be of any further service, please advise.

Very truly yours,


D. E. Fryhofer

DEF:jh



Rocky Mountain Oil and Gas Association

ROBERT E. LAUGHLIN, EXECUTIVE VICE PRESIDENT—PHONE 234-1523

P. O. BOX 640
CASPER, WYOMING 82601

35

January 12, 1973

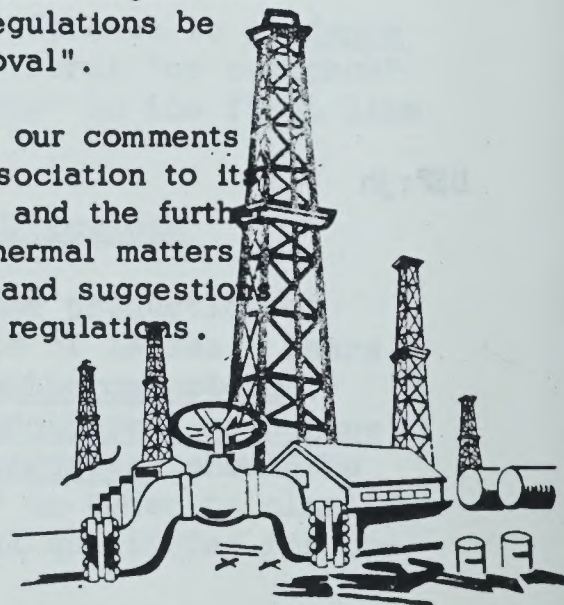
Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

The Rocky Mountain Oil and Gas Association is responding herein to the invitation extended to interested parties to submit written comments, suggestions, or objections with respect to the proposed regulations published in 37 Federal Register (November 29, 1972) at pages 25282 through 25297 entitled "Geothermal Resources - Leasing on Public, Acquired and Withdrawn Lands; Revision of Proposed Rule."

The Federal Register in which the subject regulations were first set forth (36 FR 13722, July 23, 1971) stated that the purpose of the proposed rule making was to implement the Geothermal Steam Act of December 24, 1970. Yet the regulations, as now proposed, would change the existing regulations governing the conduct of oil and gas exploration operations on the public lands by requiring each and every Notice of Intent to conduct such operations to be filed for approval with the Bureau of Land Management prior to entry upon the land. The imposition of such requirement would have a severe, adverse impact upon oil and gas exploration -- particularly in the Rocky Mountain area where the bulk of the public lands are located -- and this Association urges most strongly that Section 3045.1-1(a) of the proposed regulations be amended by deleting therefrom the words "for approval".

It is to this point only that we are directing our comments inasmuch as the principal responsibility of this Association to its members is in connection with oil and gas matters and the further fact that others possessing more expertise in geothermal matters doubtless have submitted or will submit comments and suggestions concerning the geothermal aspects of the proposed regulations.



The question of whether or not BLM approval should be required for exploration operations on the public lands was investigated most thoroughly by the BLM when the existing regulations were being drafted in 1965 and 1966. For a year the BLM studied the matter in depth in an effort to develop a procedure which would enable these highly necessary exploration activities to go forward expeditiously and at the same time assure adequate protection of the surface. The procedure finally adopted and set forth in the existing regulations requires the filing of a Notice of Intent to conduct exploration operations, but does not require approval prior to the commencement of such operations. In issuing the existing regulations the BLM realistically recognized the fact that the conditions, restrictions, limitations, and bonding requirements contained in its required Notice of Intent were totally adequate to insure protection of the surface values and that inclusion in the regulations of a requirement for approval of Notices of Intent would serve no useful purpose but would only impede and delay exploration operations.

The existing regulations have now been in effect for more than five years and have proven to be workable and fair both to the public and to the oil and gas industry. We know of no problems which have arisen that would dictate the necessity, or even indicate the desirability from the Government's standpoint, of an added requirement for approval of Notices of Intent. In fact, the clear conclusion to be drawn from the history of satisfactory results achieved under the existing regulations is quite to the contrary.

In the News Release from the Office of the Secretary of the Interior dated November 29, 1972, announcing the proposed revisions of the regulations, Secretary Morton was quoted as saying that, in line with President Nixon's Clean Energy Message to Congress in June 1971, "there is an urgent need to develop needed new sources of energy as rapidly as possible that are in compliance with the National Environmental Policy Act of 1969."

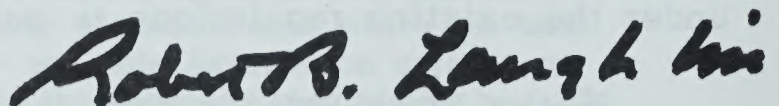
The fact that the major hope today for discovery of significant new reserves of oil and gas lies in exploration of deep, previously untested horizons, requiring increasingly more costly drilling, makes geophysical surveys an even more essential pre-requisite to drilling than was the case in the past when a good part of the exploration effort was concentrated on shallower, less expensive prospects. These surveys -- so vital to the explorationist -- already face

problems of weather and crew availability. To add additional problems and impediments would hardly appear to be in accord with the national objective of rapid development of new sources of energy as enunciated by Secretary Morton. It would seem that the national interest requires procedures which will facilitate the conduct of such surveys -- not further delay and impede them. If the requirement for BLM approval of Notices of Intent before exploration operations may be undertaken is permitted to remain in the regulations as finally issued, its effect can only be to delay oil and gas exploration for no perceivable, valid reason, and at a time when time itself is critical.

As an Association of substantially all those (major and independent companies and individuals) engaged in the discovery, development, production, transportation, and refining of oil and gas in the eight state area comprising Colorado, Idaho, Nebraska, Montana, North Dakota, South Dakota, Utah, and Wyoming, we recommend and urge that the requirement for approval of Notices of Intent to conduct exploration operations be removed from the proposed regulations.

We appreciate and thank you for the opportunity to submit our views for your consideration.

Respectfully submitted,

A handwritten signature in black ink that reads "Robert B. Laughlin". The signature is written in a cursive, slightly slanted style.

Robert B. Laughlin
Executive Vice President

RBL/hk

#9

GEORGE D. ROWAN
300 ROWAN BUILDING
LOS ANGELES 90013
627-0131

December 20, 1972 12 27

Mr. Reid T. Stone
Geothermal Coordinator
Department of the Interior
Room 7000, Interior Building
Washington, D. C. 20240

Dear Reid:

My comments on the revised regulations are as follows:

1) I feel that the pre-leasing portion thereof should either be drastically modified in favor of the private sector operator or perhaps abolished altogether. I predict that these pre-leasing regulations will inadvertently have the effect of slowing down and possibly causing interminable delays for the private sector operator in the exploration for and discovery of new geothermal steam fields in the Western states.

I feel that this general comment is particularly in point at this time in light of the entire record of Bu-Rec's wildcat southeast of Holtville, California. In the near future Interior may decide that it is in the public interest to work out a deal that is fair to all concerned whereby the private sector does the drilling and exploration work.

2) A few specific suggestions are: That the last sentence in Section C of 3201.2 be eliminated; 3203.5 contains diligence requirements that appear too tough; 3241.5 requires responsibilities that are unreasonable, particularly after discovery.

3) There is another provision which might force Interior to declare any wildcat area on which an operator sought a lease to be declared a KGRA area unnecessarily and without sound reason.

I am glad to report that we are making good progress on the new technique, which I believe I told you about, for the mining of noble metals from geothermal steam waters. I am in touch with Mr. Lundberg on this matter and we have a meeting set up for the middle of January. I hope that we may be of good service to Bu-Rec in the future.

Best regards.

Sincerely yours,



George D. Rowan

25-

SIERRA CLUB

Mills Tower, San Francisco 94104

26 December 1972

by Ansel Adams in *This Is the American Earth*

Geothermal Coordinator
Room 7000,
U.S. Department of the Interior,
Washington, D.C. 20240

Dear Sir:

Thank you for your courtesy in sending me a copy of the revised leasing and operating regulations relating to the proposed geothermal development program on federal lands. I take this opportunity to comment on behalf of the Sierra Club.

We note with disappointment that most of the comments previously submitted by the Sierra Club and other environmentally and socially concerned organizations are scarcely reflected in the relatively modest revision which has taken place. Our comments and requests for alterations and policy changes were specific and from our point of view essential for an acceptable geothermal development program on public lands. Our comments and requests are in the public record, and it is pointless to repeat them here.

We commend the inclusion of clauses concerning land subsidence and seismic activity in sections 3204.1 (Leasing) and 270.43 (Operations) and infer a heightening of environmental concern in the added introductory paragraph in 2.c. of section 3204.1 (Leasing), but remain wholly dissatisfied with its lack of specificity of standards and enforcement procedures. One additional comment that we would make in relation to the sections in both documents which treat environmental matters is to request that it be stipulated that operations on federal lands conform to local (county or other administrative subdivision) standards of environmental protection as well as state and federal standards.

In brief, we regretfully conclude that the concerns which we have previously voiced and the requests which we have made have been disregarded by those charged with the responsibility of revising these documents and can only refer you back to those previous comments.

Very sincerely yours,

Hamilton Hess
Hamilton Hess, Chairman
Geothermal Task Force
Northern California Regional
Conservation Committee

#29

SCE

Southern California Edison Company

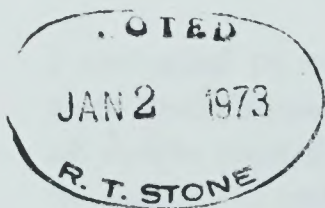
P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

WILLIAM H. SEAMAN
VICE PRESIDENTTELEPHONE
213-572-2281

December 21, 1972

COMMENTS ON GEOTHERMAL REGULATIONS,
DEPARTMENT OF INTERIOR

The Southern California Edison Company was disappointed in the regulations pertaining to geothermal resources recently published in the Federal Register, Vol. 37, No. 230, November 29, 1972. We do not believe that exploration for geothermal resources is sufficiently encouraged by the regulations as now published. The net effect will be to create a competitive bid situation in almost all cases anywhere on the Public Domain, resulting in blocking small companies from entering into exploration activities and even discouraging larger corporations from moving ahead with aggressive geothermal exploration programs.

In our opinion, the concept of known geothermal resource areas (KGRA) is not a workable one. We believe that, particularly for a new emerging energy source such as geothermal energy, a great deal remains to be learned concerning its geologic occurrence and thus the concept of issuing exploration permits, which has been so effective with other mineral commodities, would be appropriate in this case. There is essentially no basis in fact for the bulk of the areas designated presently as KGRA's. The permit system, however, would stimulate exploration for geothermal resources, and as areas were discovered, valid KGRA's would soon come into existence.

Following are more specific comments dealing with various sections of the proposed regulations:

Section 3045.1 - In order to prevent the deterrence of geothermal

exploration operations on public lands, the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" should be kept in a confidential status for a period of at least five years in order to keep a potential lessee's area or areas of interest from becoming public information.

Section 3200.0-6 - It is recommended that when an area is eventually put up for geothermal leasing, bids be received as promptly as possible thereafter and leases provisionally issued to the successful bidder before environmental conditions described under this section are fulfilled. If, after the environmental studies have been made, the lessee is unable to conform to the stipulations, he may within 30 days withdraw his application and receive a refund of the monies paid for the lease. This will better protect the interests of companies concerned with a given area and not provide such a lengthy period of time for others to obtain the necessary information, thus giving the company or companies proposing the area a better chance of acquiring the leases.

Section 32000.0-8 - There needs to be some language incorporated into this section to guarantee a power plant site. The following is a suggested change in the language: The lessee shall have the right to

use so much of the leased lands as may be deemed necessary for a power generation plant or a commercial or industrial facility, and may apply for the right to use so much of other federal lands as may be deemed necessary for such purposes.

Section 3201.1-2B - The comments which we submitted September 17, 1971 attached hereto are still considered valid. The regulations as now published still do not prescribe for the issuance of any terms and conditions necessary to protect the withdrawn lands, but instead, still provide for a unilateral act completely withdrawing the lands. This was not, in our opinion, the intent of the Geothermal Act, since it did contemplate the multiple use of land as provided for in Section 1016.

Section 3201.2 - Some period of time (and we suggest 15 days) should be allowed before leases filed for become chargeable. This will permit the applicant the opportunity to adjust his land holdings.

Section 3201.2C - We recommend that the last sentence of Paragraph C be deleted. If the Secretary is concerned over the possibility of a group controlling too much of the geothermal resource, then a limitation could be placed on the total acreage held by any combination; for example, the total acreage held by a combination could be limited to three times the amount held by individuals. This would provide

for greater flexibility in exploring for geothermal resources on the Public Domain. Similar restrictions are not placed upon other mineral commodities.

Section 3203.5 - It is recommended that expenditures relating to diligent exploration prior to the issuance of the lease also be credited towards the maintenance of the lease.

Section 3205.3-5 As mentioned in our earlier comments attached hereto, it is still recommended that royalty on production be given a fixed value. By providing a range in royalties it is difficult to establish definitive budgets for geothermal projects. It is recommended that the royalty figure be set at 10%.

Section 3210.2-1 (D) It is recommended that an applicant not be required to submit a detailed plan until he is ready to propose a drilling program, and at that time, then can submit his commercial development proposal. Much of the information asked for is not readily available until exploration has been completed and an understanding of the potential geothermal resource has been evaluated. Our comments made with respect to the Section 3211.2 (D) of the proposed regulations filed September 17, 1971 are still considered pertinent.

Section 3242.1 - 1 In our original comments attached hereto, we suggested that 640 acres is too restrictive with regard to assignment of leases. We still consider

this to be the case and strongly recommend that the minimum assignment of release be reduced to 10 acres. It is felt that this is an adequate amount of space upon which to construct a 50 megawatt commercial generating facility, such facility being considered to be as small as it is economically feasible. Furthermore, since a utility can only hold 20,480 acres in any one state as the regulations are now written, any utility who has leased to its maximum limit will probably purchase effluent from other lessees. Therefore, the utility would want a surface right to use the land. It is suggested that the 10 acre assignment could be limited to generating facilities.

CMS/wt

W H Seaman

#29

Southern California Edison Company

SCE

P. O. BOX 800

2244 WALNUT GROVE AVENUE

ROSEMEAD, CALIFORNIA 91770

TELEPHONE

213-572-2281

December 27, 1972

WILLIAM H. SEAMAN
VICE PRESIDENT

Geothermal Coordinator
Room 7000
U. S. Department of the Interior
Washington, D. C. 20240

Re: Comments on Revised
Geothermal Regulations

Dear Sir:

Our comments on the Revised Geothermal Regulations mailed to you December 22 refer to our earlier comments dated September 17, 1971. A copy of the earlier comments was to have been attached, but I believe from an oversight they were not included. We are sending you, therefore, a copy of our earlier comments for your use during your consideration of our latest remarks.

Very truly yours,

W. H. Seaman

*by
[initials]*

(Attachment)

C-D-137

COMMENTS OF SOUTHERN CALIFORNIA

EDISON COMPANY TO

PROPOSED REGULATIONS OF THE

DEPARTMENT OF THE INTERIOR-

BUREAU OF LAND MANAGEMENT,

AND GEOLOGICAL SURVEY -

GEOHERMAL STEAM ACT OF 1970

COMMENTS OF SOUTHERN CALIFORNIA
EDISON COMPANY TO
PROPOSED REGULATIONS OF THE
DEPARTMENT OF THE INTERIOR-
BUREAU OF LAND MANAGEMENT,
AND GEOLOGICAL SURVEY -
GEOHERMAL STEAM ACT OF 1970

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\$3045.1, Notice of Intent to
Conduct Oil and Gas or Geothermal
Operations

In order to keep a potential lessee's area of interest confidential, it is recommended that the B.L.M. District Managers maintain the Notices of Intent in a confidential status for at least five (5) years.

§3200.0-8, Use of Surface

The regulations as proposed provide that "any use of the surface for a power generation plant or a commercial or industrial facility will be authorized only under a separate permit issued by the Secretary for that specific use and subject to all terms and conditions which he may include in that permit." There exists a question of whether the permit will be issued under the Geothermal Act of 1970 or under one of the other acts authorizing the Bureau of Land Management to issue a permit for the construction of generating facilities. The Geothermal Act provides for the issuance of a lease and rules and regulations governing the surface use of the land. It is unclear whether the act provides for a new type of permit. This question should be clarified.

In most cases, the geothermal energy located under Federal lands will be used by the utility industry for the generation of electric energy. This industry is under extreme pressure to find new sources of relatively pollution-free energy. However, before the industry can invest large expenditures in the exploration for geothermal energy, the industry should have knowledge of the types of terms and conditions it must comply with in constructing its costly generating facilities. Therefore, the terms and conditions of any permit should be published prior to the publication of the final regulations or the issuance of a lease. Also, the public should be allowed to comment on these proposed terms and conditions.

The clarification of whether the Geothermal Act provides for a new permit and the terms and conditions is, also, important to companies who have trust indentures because the terms and conditions and the type of property interest affect a determination of whether the generating facilities constructed on land held under such a geothermal permit can be considered as property securing the issuance of bonds. Also, the permit should not be terminable without cause.

§3201.1-2(b), Department of the Interior

The provisions of Section 3201.1-2(b) are too strict. The Geothermal Act expressed the intent of Congress to issue leases on Federally withdrawn lands. The restriction in the Act was in Section 1014(a) which states,

"Geothermal leases for lands withdrawn or acquired in aid of functions of the Department of the Interior may be issued only under such terms and conditions as the Secretary may prescribe to insure adequate utilization of the lands for the purposes for which they were withdrawn or acquired."

Also, Congress intended the multiple use of the land as provided for in Section 1016 of the Geothermal Act of 1970.

The proposed regulations do not prescribe for the issuance of any terms and conditions to protect the withdrawn lands but instead provide for a unilateral act to completely withdraw the lands. Since the intent of Congress was to provide for the utilization of such lands for the generation of electric energy (House Report No. 91-155, U.S. Code Congressional and Administrative News, Volume 3, P. 5115) and since under the proposed regulations the lessee is required to produce water if it is available, there seems to be no real interference created by the leasing of Federal lands withdrawn under Section 416 of Title 43 of the United States Code. The only issue involved is the question of whether the Federal Government proposes to construct irrigation facilities on such specific lands and whether the Federal Government should have the sole right to the water produced,

The subparagraph should be rewritten to provide a set of terms and conditions under which a lease could be obtained on withdrawn lands. If this is not possible due to the numerous types of withdrawals, the Secretary should create a set of uniform terms and conditions as to each type of withdrawal or if that is not possible, the Secretary should provide for a public hearing at which the terms and conditions on a particular withdrawal might be determined. This would do away with any unilateral determination which would be against the intent of Congress.

Attached is the Edison Company's concept of a contract which an applicant would have to sign as a condition of entering in a geothermal lease on land withdrawn for reclamation purposes under 43 USC 416. This contract is an example, and the concept is always subject to negotiation.

If the regulations are left in their present state or if a hearing to determine the terms and conditions is required, the duration in time between the application for a lease and a determination by the Secretary might be substantial. Therefore, it is necessary and equitable that during the period of time in which the Secretary is making his finding as to whether the issuance of geothermal leases on withdrawn lands would or would not be compatible with the purpose for which the withdrawal was made that the provisions regarding the chargeable acreage limitations should not be applicable.

It is also suggested that if the Secretary determines that one of the conditions of the lease will be that the Federal Government should receive a certain percent of the effluent produced

from the leased land, then the percentage of the total acreage leased under such conditions as determined by computing the Government's share of the effluent to the total effluent produced should not be allocated as chargeable acreage.

§3201.2(a), Acreage Limitations

In the case of a lease filed under §3211.1, Availability of Lands, on an unknown geothermal area, the acreage should not be chargeable until fifteen (15) days following the drawing. This will allow an applicant the opportunity to adjust its holdings. The Mineral Leasing Act presently provides that filings which are treated simultaneously are not chargeable until the drawing.

§3201.2(c), Acreage Limitations

The regulation as proposed provides, "No holding of acreage in common by the same persons in excess of the maximum acreage specified in the law for any one lessee will be permitted." This sentence should be stricken from the regulations. A similar section exists under the oil and gas regulation to prevent a group of persons from controlling all the available gas leases. However, under the Oil and Gas Law the maximum area in one state which can be held by a lessee is 246,080 acres while under the Geothermal Law is 20,480 acres. There is a substantially smaller possibility a group could control all geothermal resources and if the Secretary is still concerned, then a limitation should be placed on the total acreage that could be held by any combination. For example, the total acreage held by a combination could be limited to three times the amount held by any one individual. Also, the Coal and other mineral laws do not have a similar restriction.

§3203.2, Lease Acreage Limitation

The regulations as proposed provide that no lease will be issued for less than 1280 acres, except at the discretion of the Secretary. Since a lessee is limited to holding a total of only 20,480 acres per state, it is recommended that the lease issuance limitation be reduced to 640 acres to provide for more workable projects. Such a limitation would be compatible with the Mineral Leasing Act.

§3204.1(c)(2), Water Pollution

As the clause stands, a lessee could be prevented from reinjecting the geothermal resources back into the ground since some geothermal brines or effluent could be defined as "toxic." And yet, such brines or effluent may be perfectly compatible to the underground reservoir into which it is proposed to be reinjected. Therefore, the lessee should have the right to reinject any unused portion of the geothermal effluent into any formation that does not contain potable water

§3205.3-3, Escalating Rental Rates

Because the development of geothermal resources is a relatively new industry, and because of the time lag between discovery and placement of a geothermal electric generating station on the line, it is recommended that the rental escalator clause be removed. No such clause appears in the Mineral Leasing Act.

\$3205.3-5, Royalty on Production

Royalty on production is set forth at not more than 15% and not less than 10%. Because of this range, it would be difficult to provide definitive budgets for geothermal projects. It is recommended that the royalty figure be set at 10%.

§3205.3-6, Royalty on Commercially
Demineralized Water.

It is unclear as to whether or not water from a geothermal electric generating plant's condensers would fall within this section and thus require royalty payments thereon. It is recommended that the clause be clarified to make it clear that such royalty payments are to apply only to specially processed water and not water used in the generation of electric energy.

§3211.2, Application or §3220.2, Nominations

A prescribed lease application or nomination form should be adopted in order to avoid any question of whether the applicant complied with all of the Secretary's requirements. This is necessary in order to avoid possible litigation by an unsuccessful applicant who alleges that the successful applicant did not comply with the Secretary's requirements.

§3211.2(d), Application

The regulation as proposed is much too stringent because it requires the applicant disclose his commercial development plan, including the proposed well locations, the potential surface plant facilities and pipelines. This information is really not available to the applicant who is beginning an exploration program. Not until such program is complete will the applicant know how many, if any, wells will be drilled and the patterns of such wells. Based on the pattern of well locations, the surface facilities will be constructed. For this section, an "exploration program" should be defined as that program of well drilling necessary to determine if there are sufficient geothermal resources available to produce effluent in sufficient quantities to operate a commercial generating facility.

It is the Edison Company's position that the environmental statement required for any geothermal lease should be limited to a statement covering the possible environmental effects of the exploration program with a broad statement as to the general plan of development. When the exploration program is complete, the lessee will then have an understanding of the geothermal resources available and will be able to provide a complete and accurate development program.

At that time, an environmental report could be required as to the commercial development work to be performed in making the fluid available for use in steam generation. Section 3200.0-8

requires that the lessee obtain a special permit for the use of the surface of the Federal lands before constructing any generating facilities. At that time, an environmental report could be issued covering the environmental effects of the proposed generating facilities.

§3242.1-1, Assignments and Transfers

Limiting the assignment of leases to more than 640 acres is too restrictive. Since it is contemplated by the proposed Geothermal Steam Regulations that geothermal electric generating stations will be constructed and operated by third parties, and that assignment of lease interests and surface use permits may be made for that purpose, the assignment limitation should be compatible with the requirements of such a plant. Accordingly, it is recommended that the minimum assignment of a lease be reduced from 640 acres to as small as 10 acres. The 10-acre limit is suggested because a 50 MW commercial generating facility could be placed within such an area. A 50 MW facility is about as small a facility as is economically feasible.

Another reason for providing for a 10-acre assignment is the acreage limitation. Since a utility could only hold 20,480 acres in any one state, a utility who has leased to its maximum limit will probably purchase effluent from other lessees. Therefore, the utility would want a surface right to use the land. Possibly, the 10-acre assignment should be limited to generating facilities.

§3243.1, General

The primary problem with this section is that it does not restrict the authorized officer from requiring the production of demineralized water. Such production would result in an undue waste of geothermal energy.

Subparagraph (a) states, "Beneficial production or use is not in the interest of the conservation of natural resources." This should be expanded to state that "Beneficial production and use is not in the interest of conservation of natural resources including but not limited to the production of water that would result in an undue waste of geothermal energy."

II-A

\$270.48, Sales Contracts

The clause reads: "The lessee shall file with the Supervisor within 30 days after the effective date thereof copies of all contracts for the disposal of geothermal resources from the lease."

It is unclear as to what date they are referring to when they speak of "the effective date thereof". It probably means the effective date of the sales contract. It is recommended that this clause be clarified accordingly.

II-B

§270.92(f), Sundry Notices and Reports on Wells

The Supervisor should be allowed to grant oral permission for abandonment which can be followed by written authorization. This could prevent any delay and the expense of such a delay.

II-C

§270.97, Public Inspection of Records

As this clause now reads, proprietary information obtained at considerable expense to the lessee could be made available to the public upon a determination of the Supervisor. It is recommended that the clause be modified to read as follows:

Geologic and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect.

Standard Oil Company of California

225 Bush Street, San Francisco, California 94120

#41

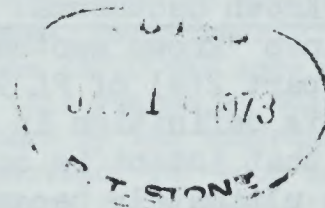
L. T. Vice
Vice-President

January 11, 1973

1700 K Street, N.W.
Washington, D.C. 20006
202-296-4357

PROPOSED GEOTHERMAL RESOURCES LEASING AND OPERATING REGULATIONS 43 CFR PARTS 3000, 3045, 3104, 3200

Geothermal Coordinator
Department of the Interior
Washington, DC 20240



Dear Sir:

We submit the following comments on the subject proposed regulations which were published in the November 29, 1972 issue of the Federal Register.

3045.1-1 Application. This is an amendment of existing regulations on oil and gas exploration operations to make them applicable to geothermal resources exploration operations. These regulations, as you know, provide for the filing of a "Notice of Intent to Conduct Oil and Gas Exploration Operations" on a form approved by the Director. This form was designated No. 3107-1 by the Director and has remained in effect, unchanged since the regulations became effective. An examination of the Departmental files on this subject will reveal that when the regulations were first considered it was proposed that they require the filing for approval of an application for a license to conduct oil and gas exploration operations, but after careful consideration it was decided that more efficiency and economy for both the Government and industry would result if the regulations provided for the filing of a notice of intent to conduct such operations without any approval required provided that the notice contained adequate stipulations for protection of the United States' interests and was accompanied by a compliance bond. These regulations were published in the June 23, 1967 issue of the Federal Register to become effective July 22, 1967, and at the same time BLM Form 3107-1 Notice of Intent to Conduct Oil and Gas Exploration Operations was adopted by the Department. As stated above, both the regulations and Form 3107-1 have remained unchanged to date, without any complaints that we are aware of, either by the Government or by industry. One reason for the success of these procedures has been the self-policing policy of industry. The fact that the notice of intent is being amended to include geothermal resources exploration operations does not in itself justify requiring approval prior to the commencement of such operations. Accordingly, we respectfully request that the phrase "for approval" be deleted from the sixth line of the proposed regulations for the same reason that it was not included in the existing regulations, i.e., for more efficient and economical operations by both the Government and by industry.

In the event that this recommendation should not be adopted, it is requested that the regulations provide that the authorized officer shall act upon a notice of intent as soon as possible, preferably within 48 hours, but certainly within not more than five working days. The reason for making this request is that, as you know, conditions beyond an operator's control frequently make it necessary to change exploration plans with little, if any advance notice. Frequently this involves moving to a new area at a considerable cost in time and money which will be greatly increased without immediate action on a given notice of intent.

3200.0-5(j) Known Geothermal Resources Area. The first sentence of this section defines "known geothermal resources area" exactly as it is defined in subpart 2(e) of PL 91-581, but the remainder of the section qualifies this definition in a way that seems to contravene the intent of Congress if that intent is correctly stated in House Report 2140 on S 1674 which ultimately became PL 91-581. The Report declares:

1. That the term "known geothermal resources area" is used in the Act in much the same way as the term "known geologic structure" is used in the Mineral Leasing Act;
2. That the filing of two applications for the same land may or may not indicate a "competitive interest" and
3. That all factors must be considered in determining if a given area is a KGRA.

Inasmuch as "geology, nearby discoveries, competitive interests," are all named indicia for defining a KGRA it would appear that they are important factors, each of which must be considered in making a KGRA determination. However, the third sentence of the proposed regulation ignores this mandate and provides that the existence of two or three geothermal resources leases in a potential resources area will be sufficient reason for causing the area to be named a KGRA. As a matter of fact, this sentence can be interpreted to mean that two noncontiguous leases held by one person in the same general area would be sufficient reason for that area to be declared a KGRA.

This section was designated as 3000.0-5(d) in the original proposals and in our letter of November 8, 1971 we recommended, for the sake of clarity, the addition of the following sentence, "The filing of two or more applications for the same land does not of itself indicate a competitive interest." We submit again that the original proposal should remain unchanged except for the addition of the sentence quoted.

In considering the statement in House Report 2140 that the term KGRA is used in the Act in much the same way as the term "known geologic structure" is used in the Mineral Leasing Act, we refer you to Geological Survey Circular 419 which "presents the procedures used by the Geological Survey in defining known geologic structures for leasing laws administration" and which says on page one "Known geologic structure definitions are made after evaluation of all controlling factors, and such definitions are made conformable to the dominant structural feature involved..." (emphasis added).

3203.5 Diligent Exploration. This regulation can become extremely burdensome after the fifth year of the primary term, even to the extent of discouraging a lessee from maintaining the lease, particularly if the annual rental for the first five years exceeds the \$1.00 per acre minimum provided by proposed section 3205.3-1. For this reason we suggest that the fourth sentence of this section be amended by the insertion of the phrase "unless waived or modified by the Supervisor for good cause" immediately following the words "Moreover, after the fifth year of the primary lease term..."

3204.1(c) Pollution Abatement. In view of the general emphasis on this subject throughout the country, it would appear that most federal and state standards have been made sufficiently restrictive to protect the common interests. For this reason we recommend that the Supervisor's authority to impose additional requirements be limited to the rare and unusual situations which cannot be categorized as covered by federal and state standards.

3204.3 Readjustment of Terms and Conditions. Subparagraph (a) of this section not only limits the arbitration period for the readjustment of lease terms to the bare minimum of sixty days authorized by the Act, but also fails to give any assurance that the authorized officer will be required to respond to a timely-filed protest against the readjustment of terms. We are certain that it is not the intent, but theoretically a lessee could timely file a protest and the authorized officer, for reasons other than deliberate negligence fail to respond to the protest within the 60-day period. We suggest, therefore, that the last sentence of the proposed subsection 3204.3(a)(2) be amended by the deletion of the phrase "the lease may be terminated by either party" and the substitution therefore of the following: "...either party may serve notice upon the other that in the absence of an agreement within thirty days from receipt of notice the lease will be terminated."

3205.3-2 Payment of Annual Rental. This section and section 3205.3-1, each refer to annual rentals of "not less than \$1.00 per acre or fraction thereof" which is the wording of the Act. The problems created by the failure of the regulations to specify the exact amount of annual rental per acre or fraction thereof are obvious, and it is requested that the two proposed sections be amended accordingly. The minimum rental of \$1.00 required by the Act seems a reasonable amount for a non-competitive lease.

Respectfully submitted,

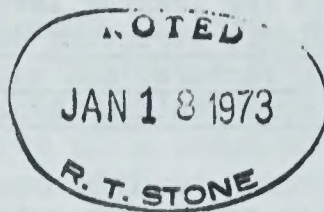


STANDARD OIL COMPANY OF CALIFORNIA
WESTERN OPERATIONS, INC.

#114

225 BUSH STREET SAN FRANCISCO CALIFORNIA 94120

D. G. COUVILLON
DIRECTOR AND VICE-PRESIDENT



January 11, 1973

Proposed Geothermal
Resources Regulations

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Dear Sir:

We appreciate the opportunity to comment on the proposed geothermal resources regulations which were published in the Federal Register for Wednesday, November 29, 1972.

Amendment to Subpart 3045 - Geophysical Explorations (Oil and Gas): According to the introduction in numbered Paragraph 2 of the proposal as set out in the Federal Register this amendment would substitute the words "oil and gas, or geothermal resources" for "oil and gas" wherever they appear in the subpart. We have no objection to this. However, in addition to these changes the words "for approval" are proposed to be inserted in Section 3045.1-1 - Application. The effect of this change is to require prior BLM approval before allowing the commencement of any activity authorized by the subpart. Since this regulation applies not only to geothermal resources exploration, but also to oil and gas exploration, we strongly object to this change. As you know, Subpart 3045 has been in effect for oil and gas operations since July 23, 1967. During this period, our company and other companies and individuals have conducted hundreds of operations on public domain lands pursuant to these regulations. To our knowledge, there have been few, if any, complaints on the part of BLM officials that the regulations were not satisfactory from the standpoint of the United States. Consequently, we see no reason to change a procedure that has worked to the satisfaction of both parties for five and one-half years. The very nature of geophysical operations is such that a program may have to be changed while the crew is in the field. To require prior approval in such a case could well result in a costly delay to the operator without any corresponding benefit to the United States.

Subpart 3200 - Geothermal Resources Leasing; General:

1. Section 3200.0-6 of this proposed new subpart, which deals with preleasing procedures, would give the Director of the Bureau of Land Management the option to follow or not to follow, prior to leasing, departmental procedures for determining the environmental impact of such proposed leasing. Since it is almost

January 11, 1973

certain that the environmental aspects of geothermal resources development must be considered at some point in the development of a geothermal prospect, we strongly urge that this evaluation be done prior to leasing so that the prospective lessees will know prior to the time they acquire geothermal leases what additional restrictions or requirements will be imposed to protect the environment. If these requirements and restrictions are deferred, the lessees may suddenly find themselves confronted with an uneconomic operation after they have invested considerable sums of money.

2. Section 3200.0-8 sets out the lessee's right to the use of the surface of leased lands for the purpose of developing geothermal resources. Our only concern here is that the language in referring to the lessee's right to use the surface for the construction of a power generation plant or other commercial or industrial facility is couched in the singular. It is quite possible and probable that more than one such plant would be required for a lease containing the maximum allowable acreage. Therefore, we request that the words "or plants" be added after the word "plant" and "or facilities" be added after the word "facility."

Subpart 3203 - Leasing Terms: Section 3203.5 inserts a provision requiring "diligent exploration of the leased resources." This Section would provide that after the fifth year of the lease term the lessee must spend, during the year, on exploration operations, an amount equal to at least two times the sum of the minimum annual rental plus the amount of rental for that year in excess of the fifth year's rental. We think this regulation imposes an unjustifiable burden on a lessee. In another part of the regulations provision is made for escalating the annual rental during the second five years of the term. To impose this harsh standard for diligent exploration on top of escalating rentals may well make an otherwise economic operation uneconomic. Furthermore, it would seem that this regulation goes counter to the will of Congress as expressed in the Act which provided for a ten-year lease term. In our opinion, it is far better to make a general requirement for diligent operations and leave the interpretation of that requirement to the Area Supervisor of the U. S. Geological Survey based on the fact situation of a particular lease, a particular area, and the performance of a particular lessee thereunder.

Subpart 3204 - Surface Management Requirements, Special Requirements: Section 3204.1 (c) (2) sets out the requirements of the lessee with regard to water pollution. However, it is not clear from this regulation that any toxic materials which may be produced from geothermal formations may be reinjected into such formations. Accordingly, we suggest that the last sentence of this Section be revised by adding "including natural toxic materials" after the word "fluids."

Subpart 3205 - Service Charges, Rentals and Royalties:

1. Sections 3205.3-1 and 3205.3-2 deal with the first and subsequent years' rental to be paid under a geothermal lease. In both cases, the words "not less than" have been inserted prior to the words "\$1 per acre." In order to make the matter of rentals more certain, we urge that the rental be established, in both cases, at \$1 per acre and that the words "not less than" - also in both cases - be deleted.

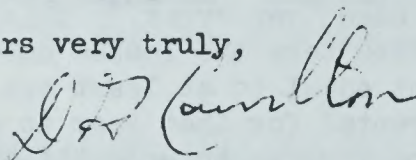
January 11, 1973

2. Section 3205.3-5 contains proposed provisions with regard to royalty. In the case of a Federal oil and gas lease no royalties are due for oil and gas produced from a lease which is unavoidably lost or which is used for production purposes on the leasehold premises. We think such a provision should be added to this regulation. We suggest that the words "except that no payment of a royalty will be required on geothermal resources unavoidably lost or used in preparing the geothermal resource for utilization" be added at the end of this Section.

Subpart 3210 - Noncompetitive Leases; General: Section 3210.2-1 sets out the information which must accompany an application for a lease. As part of this information, the applicant would be required to furnish a proposed exploration plan. We strongly urge that this requirement be deleted. To comply with this requirement a prospective lessee would have had to complete his exploration program prior to the time that he submitted this application. Since, in most cases, leasing will precede exploration this requirement, therefore, is impractical. The various requirements imposed on a lessee by the Act and the regulations will adequately protect the government against abuses by speculators.

Again, we express our appreciation for the opportunity of submitting comments.

Yours very truly,



D. G. Couvillon

#39

Standard Oil Company (Indiana)

1625 K. Street Northwest
Washington, D.C. 20006
202-737-0025

William E. Block, Jr.
Attorney

January 15, 1973

Geothermal Coordinator
Department of the Interior
Washington, D. C. 20240

Dear Sir:

Re: 43 CFR 3000, 3045, 3104,
and 3200
Geothermal Resources

Under date of November 29, 1972, there was published in the Federal Register an order inviting public comment on proposed regulations to implement the Geothermal Steam Act of December 24, 1970, 84 Stat 1566 (30 USC 1001-1025). In response thereto we offer comments as follows:

3045.1-1 Application.

Subpart (a) has been amended so as to provide that a "Notice of Intent to Conduct *** Exploration Operations" be filed for approval prior to entry upon lands subject to such operations. The requirement of prior approval was considered and rejected by the Bureau of Land Management when the seismic and geophysical exploration regulations were first proposed in 1967. The concern then of the oil and gas industry, as well as the Bureau, was that this requirement could and probably would result in inefficient use of manpower, money, and equipment. The basis for this concern is equally valid today.

For various reasons (weather conditions, crew availability to name just a couple) it is frequently necessary to change exploration plans with little if any advance notice. Bearing this in mind, it

is evident that retention of the prior approval feature would almost certainly add to the operators' burdens by causing undue delays and confusion. Obviously, the existence of such conditions could only operate to detract from the industry's capability to supply the rapidly increasing national energy demands.

It is submitted that the existing procedures have worked smoothly during the five years they have been in existence and thus there appears no valid reason for changing them. Moreover, the conditions, admonitions, and limitations set forth in the Notice of Intention itself (Form 3107-1, July 1967) more than adequately serve to protect all public interests in the lands. Further, we feel it would be grossly inappropriate to amend existing oil and gas regulations by promulgating geothermal resources regulations that on their face do no purport to embrace oil and gas operations. Accordingly, it is strongly urged that the prior approval requirement be deleted from the final version of the regulations.

3200.0-5 Definitions.

Subparts (h) and (i), respectively, define a "Geothermal resource province" and a "Potential geothermal resource area". Neither of these has any foundation in the statute, hence their creation appears to be contrary to the intent of Congress. Also, since Section 4 of the Act is limited to two categories of lands, namely those within and those not within a "known geothermal resources area", it is evident the additional definitions will unduly complicate and confuse the administration of the leasing function contemplated thereunder. Consequently, we recommend they be eliminated.

The definition of "Known geothermal resource area" contained in subpart (j) overemphasizes "competitive interest". It is our understanding that the mere presence of multiple noncompetitive filings on a given piece of land would be considered evidence of sufficient competitive interest so as to warrant the tract being placed within a KGRA, thereby compelling competitive leasing. We do not feel that competitive interest necessarily follows from multiple filings. A historical review of the legislation Congress considered in developing the policy finally enunciated in the 1970 Act bears this out. In referring to the term "competitive interest", the House

Interior Committee when reporting on S. 1674 (House Report No. 2140, 89th Congress) made the following observation:

"The term 'competitive interest' in this definition is not intended to require competitive leasing of Geothermal Resources automatically in every case in which two applications are filed for the same land. To determine whether a given area is or is not in a 'Known Geothermal Resource Area' consideration must be given to all factors."

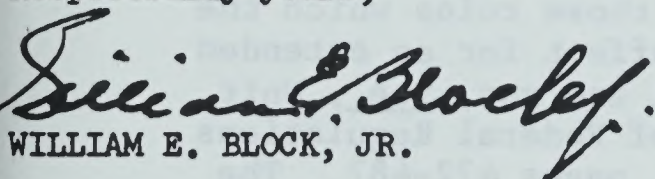
In these circumstances, we urge that the term under discussion be placed in perspective through the insertion of clarifying language which would make it clear that the existence of multiple filings for the same land does not standing alone necessarily indicate a competitive interest requiring competitive leasing.

3204 - Surface Management Requirements, Special Requirements

Subpart 3204.1 (c) provides that a lessee shall comply with all Federal and State standards with respect to the control of pollution. However, it also gives the Supervisor the discretionary authority to impose additional, more stringent standards. We believe that the operations of the lessee should be governed solely by standards established through appropriate procedures adopted in accordance with existing statutory policies and guidelines. Likewise, the Supervisor's authority should be expressly limited to the enforcement of those standards. Accordingly, it is urged that the provision under discussion be appropriately modified so as to delete the granting of any discretionary authority in excess thereof.

Thank you for the opportunity to comment on this proposal.

Respectfully yours,


WILLIAM E. BLOCK, JR.

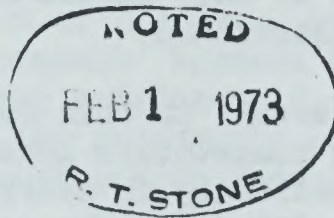
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TEXACO
INC.

#50

1001 CONNECTICUT AVENUE, N.W.
WASHINGTON, D. C. 20036

JAMES H. PIPKIN
EXECUTIVE VICE PRESIDENT



January 31, 1973

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Re: Geothermal Resources Operations on Public,
Acquired and Withdrawn Lands

Dear Sir:

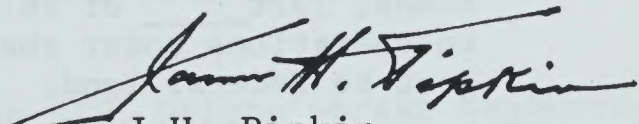
Reference is made to the notice of proposed rule making issued by the Department of the Interior, Geological Survey, which appeared in the Federal Register of November 29, 1972 (37 F.R. Part III), and relates to "Geothermal Resources Operations on Public, Acquired and Withdrawn Lands." With respect to this notice, Texaco Inc. submits the following comments.

The subject proposal is the reissuance of a prior proposal (37 F.R. Part III, issued May 3, 1972), but with certain modifications based upon comments received at public hearings and through written submissions. Under letter dated July 10, 1972, Texaco submitted comments on the original proposal, but many of its suggested changes were not adopted. Texaco's basic recommendation was and still is that any proposal dealing with geothermal resources unit plans be made consistent with those rules which the Department of Interior has had in effect for an extended period governing unit plans for oil and gas, i.e., Unit Regulations for Oil and Gas, Code of Federal Regulations - Title 30, Sections 226.1-226.17, pages 472-487. The concepts contained in these rules have proven with experience to be workable and there is no justification for deviating from such with respect to geothermal resources unit plans.

Texaco requests that the Department of Interior give consideration to adopting our previous recommendations on this matter. To facilitate your review of our request, attached hereto is a restatement of our comments, but directly related to the revised pages and sections contained in the new proposal.

We appreciate the opportunity to be able to file these comments. If you have any questions concerning such, please contact the undersigned.

Very truly yours,


J.H. Pipkin

JHP:db
Attachment

ATTACHMENT

1. Page 25306. We recommend the addition of the following paragraph as Sec. 271.8(e) :

"Whenever the Federal land involved in a unit or cooperative agreement accounts for less than 50 percent of the acreage of the unitized lands, and whenever, if the field involved is fully developed, the Federal land has less than 50 percent of the estimated recoverable unitized substances, the agreement may, with the approval of the Secretary, or his duly authorized representative, make portions of the Operating Regulations, Part _____ of this chapter, inapplicable to operations under the agreement with respect to Federal land.

2. Page 25308. We recommend the deletion of "and utilization" in Article VI, Sec. 6.1 to conform to Oil and Gas Unit Regulations since it may be interpreted that the Unit Operator would be compelled to construct a plant to utilize the unitized substances.

3. Page 25308. Article VIII, Sec. 8.2, change "60 percent" to "75 percent", since we believe the stated 60 percent is too low. This also conforms to the Oil and Gas Unit Regulations.

4. Page 25308. Article X, Sec. 10.1, delete "or utilizing" for same reason as in (2) above.

5. Page 25308. Article X, Sec. 10.5, we recommend insertion of following paragraph at the end to provide reasonable notice and hearing on behalf of Unit Operator again to conform to Oil and Gas Unit Regulations.

"Powers in this section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than 15 days from notice."

6. Page 25309. Article XI. Sec. 11.4, it appears that a "blank space" was inadvertently omitted before the word "feet" in the last sentence.

7. Page 25309. Article XII. We recommend addition of following paragraph as Sec. 12.7 to provide for possibility of subcommercial well as per Oil and Gas Unit Regulations :

"Whenever it is determined, subject to the approval of the Supervisor, that a well drilled under this agreement is not capable of production in paying quantities and inclusion of the land on which it is situated in a participating area is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be allocated to the land on which the well is located unless such land is already within the participating area established for the pool or deposit from which such production is obtained. Settlement for working interest benefits from such a well shall be made as provided in the unit operating agreement."

8. Page 25309. Article XIV. Delete phrase beginning with "provided" at the end of Sec. 14.1 and the phrase beginning with "and further provided" at the end of Sec. 14.2 and add the following new paragraph to each section :

"SURRENDER. Nothing in this agreement shall prohibit the exercise by any working interest owner of the right to surrender vested in such party by any lease, sublease, or operating agreement as to all or any part of the lands covered thereby, provided that each party who will or might acquire such working interest by such surrender or by forfeiture as hereafter set forth, is bound by the terms of this agreement."

This will allow the right of working interest owners to make a surrender without prior written approval of the Director and conform to the Oil and Gas Unit Regulations.

9. Page 25310. Article XVII, Sec. 17.10. To conform to Oil and Gas Unit Regulations permitting two-year extension on segregated leases, add the following paragraph :

"Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not

committed as of the effective date of unitization : Provided, however, that any such lease as to the nonunitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as geothermal resources are produced in paying quantities."

11. Page 25310. Article XVIII, Sec. 18.1(b), substitute "paying" quantities for "commercial" quantities. In Sec. 18.2 substitute "75 percent" for "a majority". This clarifies these sections and ties to the Oil and Gas Unit Regulations.

12. Page 25311. Article XXVIII, Sec. 28.1. To relieve Unit Operator of Unreasonable responsibility as is case in Oil and Gas Unit Regulations, add following paragraph :

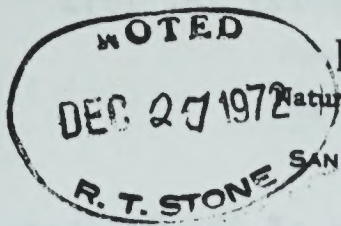
"Unit Operator as such is relieved from any respons bility for any defect or failure of any title hereunder."

13. Page 25311, Article XXIX, Sec. 29.2, add the following new sentence before the sentence beginning with "No taxes..."

"The working interest owners may currently retain and deduct sufficient of the unitized substances or derivative products, or net proceeds thereof from the allocated share of each royalty owner to secure reimbursement for the taxes so paid."

This will also conform to Oil and Gas Unit Regulations.

14. Page 25310. Article XVI, Sec. 16.1. Change "30 days" to "90 days" since the 30 days is too short a notice period.



EDWARD B. TOWNE
Natural Gas-Oil-Geothermal Resources
420 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94111
[415] 434-0700

#8

Geothermal Coordinator, Room 7000
U.S. Department of the Interior
Washington, D.C. 20240

December 21, 1972

Dear Sir:

The revised geothermal leasing proposal published November 29 add more restrictions to exploration of Federal Lands for geothermal steam. Section 3200.0-5 Definitions, (j) "KGRA" makes it impossible for me, a well known and successful finder of geothermal steam, to prospect in any wildcat area without causing all Federal Lands in the area to be classified as KGRA. This immediately sets up a bidding situation in which I will probably lose if I have made a discovery in the area. Why should I bother to enrich others? With each revision you make it more difficult to prospect for geothermal steam.

I enclose copies of my letters of April 19, 1971 and April 23, 1971 to Secretary Morton for the record.

Very truly yours,

Edward B. Towne

Hon. Rogers C. B. Morton
U. S. Secretary of the Interior
Interior Building
Washington, D. C. 20240

April 19, 1971

Dear Mr. Morton:

For some years, and in anticipation of the passage of the Geothermal Steam Act of 1970, I have been leasing fee lands in an area of Lake County, California. This is definitely a wildcat type prospect and it is generally located six to ten miles away from the nearest geothermal steam production. The area is also separated from production by two deep dry holes, the nearest of which is about five miles from my proposed location. Interspersed within this 10,000 acre prospect is about 5,000 acres of Federal land. In order to have a drillable prospect I have to get a lease on the Federal lands so I filed Offers to Lease for Geothermal Steam in the Sacramento Land Office. I felt that as first to file, and because of the remoteness from production, and the complete absence of any surface manifestations of geothermal steam, that I would eventually be issued the leases and be able to drill. Based on past experience of USGS classification of Known Oil & Gas lands, I had every reason to believe that this area would not be classified as Known Geothermal. However, much to my amazement, pages 5626 & 5627 of the Federal Register, March 25, 1971 listed a partial list of lands determined to be Known Geothermal. This Partial List contained almost 770,000 acres, and naturally all of the 5000 acres on which I had filed.

Mr. Morton, in all of the U.S.A. there is only one known commercial steam area and by the wildest stretch of the geological imagination this contains only about 15,000 acres. In my fee land leasing I have had no competition and no trouble getting 20 year leases for no bonus and \$1.00 per acre per year rental and a 10% landowners royalty. Over the many years of trying to get a Geothermal Steam Lease Act, I know that the intent of Congress was to encourage the development of Geothermal Steam. The effect of this arbitrary listing of vast areas as Known Geothermal by the USGS is to discourage development.

In conclusion, I must protest the actions of the USGS and hope that you will agree with me that they are discouraging the development of new steam fields in contravention of the clear intent of Congress.

Very truly yours,

cc: Hon. Harold T. Johnson, House of Representatives.
Hon. Norman B. Livermore, Jr., Secretary for Resources, State of Calif.
Mr. W. T. Pecora, Director, United States Geological Survey.

EDWARD B. TOWNE
Natural Gas-Oil-Geothermal Resources
420 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94111
(415) 434-0700

Hon. Rogers C. B. Morton
U. S. Secretary of the Interior
Interior Building
Washington, D. C. 20240

April 23, 1971

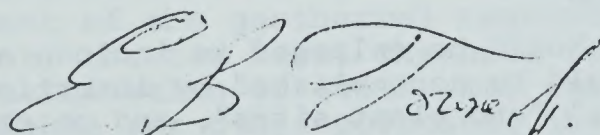
Dear Mr. Morton:

On April 19, 1971 I wrote to you protesting the arbitrary and geologically indefensible classification by the USGS of vast areas of Federal lands as Known Geothermal Resource Areas.

In that letter I neglected to document my protest. I am enclosing copies of my Offers to Lease for Geothermal Steam with Sacramento Land Office Serial Numbers S-4148, S-4149, S-4301 and S-4302.

I would also like to refer you to the Mineral Resources Act of 1970 in which Congress enacted a bill declaring that geothermal resources exploration should be encouraged .

Very truly yours,

Handwritten signature of Edward B. Towne in cursive script.

cc: Hon. Harold T. Johnson, House of Representatives
Hon. Norman B. Livermore, Jr., Secretary for Resources, State of Calif
Dr. W. T. Pecora, Director, United States Geological Survey.

Union Oil and Gas Division: Geothermal Division

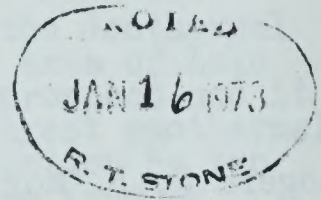
Union Oil Company of California

Union Oil Center, Box 7600, Los Angeles, California 90051

Telephone (213) 486-6260



#43



Carel Otte
Division Manager

January 9, 1973

Geothermal Coordinator
Department Of The Interior
Washington, D. C. 20240

Dear Sir:

Reference is made to the Notices of Proposed Rule Making by the Department Of The Interior regarding Geothermal Resources Leasing on Public, Acquired and Withdrawn Lands and Geothermal Resources Operations on Public, Acquired and Withdrawn Lands which were published in the Federal Register on November 29, 1972. In accordance with your request that interested parties may submit comments, objections and suggestions to the proposed rules, we respectfully submit the following for your consideration.

Leasing On Public, Acquired And Withdrawn Lands

3045.1-1 - Applications.

(b) 1. This provision requires the names and addresses of both the person, association or corporation for whom the exploration operations are being conducted, as well as, the person who will be in charge of the actual exploration activities. We believe that the name and address of the contractor should be sufficient; it should not be necessary to disclose the principal involved which becomes public knowledge and which would be adverse to his interest. This disclosure is not a requirement under Oil and Gas Regulations. The change could be accomplished by deleting commencing on the second line the following: "both of the person, association, or corporation for whom the operations will be conducted and".

3200.0-5 - Definitions.

(g) This definition should be enlarged to include a provision for plant sites. This could be accomplished by inserting on the fourth line after "operations" "and plant sites", and on the tenth line following "shops" insert "plant sites".

January 9, 1973

(j) We feel that the definition for KGRA has been enlarged upon considerably and reaches far beyond the intent of the Geothermal Steam Act of 1970. It would appear that this definition has all but eliminated noncompetitive leasing. It is obvious that the Congress intended by their action that the Department establish a procedure for noncompetitive leasing. However, the issuance of two or three geothermal leases on Federal lands, which may comprise as little as a few hundred acres, being sufficient to classify an area as KGRA will certainly defeat the noncompetitive system. If the Department does not plan to have a viable program of noncompetitive leasing, it should be made perfectly clear in the rules by the elimination of any regulations in this regard.

Even the definition of KGRA as stated in the Act and repeated in this section is very broad and general, making it nearly impossible for a person to determine the classification of lands. When conditions are uncertain, prudent businessmen will not risk their capital for exploration and development. For this reason, we recommend a more precise and definite yard stick be established for the Director and the industry to follow.

All the subjective factors listed in the first half of the definition culminate ultimately in one objective factor, the issuance of a lease to a party. We suggest the deletion of the following language beginning on the seventeenth line: "Existence of a few, usually two or three, geothermal leases on Federal lands, or geothermal development on other than Federal lands" and substitute the following: "Issuance of geothermal leases on Federal lands comprising at least 5,000 acres in a reasonably compact area or geothermal production within five miles of Federal lands".

The rules and regulations could be interpreted that a mere application for a lease by a single knowledgeable party or multiple applications by several parties in itself creates a competitive interest and therefore classifies the lands as KGRA. We feel that this is undesirable and to remove the ambiguity we suggest the addition of the following sentence: "Applications for geothermal leases will be specifically excluded as a point of consideration in classifying lands KGRA".

3200.0-6 - Preleasing procedures.

(b) The Director when he evaluates the potential effect of the leasing program, should also consider the benefits to be derived from the development of the geothermal resource such as the impact on local employment, the tax base, the need for relatively pollution free energy, the utilization of geothermal energy as opposed to other fuels utilizable for other purposes, the national balance of payments, etc.

3200.0-8 - Use of Surface.

The surface use restrictions should be determined at the time of leasing. Our concern relates to the discovery of a geothermal resource after a good faith effort and many expenditures and possible subsequent denial of the use of the land for plant facilities, pipelines, power transmission lines, roads, etc. The nature of the geothermal resource requires that its conversion into electric power take place in the immediate vicinity of the wells because the distance geothermal fluids can be transported is quite limited. Therefore, we believe that with the issuance of the lease, the lessee obtain the right to convert the energy into power so that it can be transported off the leased lands. If for certain reasons such plant installation is not in the public interest, this should be determined in advance of issuing the lease. Our knowledge and experience to date certainly permits us to assess the impact of a power development and determine its desirability and make this decision.

3201.1-6 - Excepted Areas.

The language of this subsection could be interpreted as completely and forever excluding the enumerated public lands from geothermal exploration and development. In many of these areas, geothermal operations could be conducted with minimal interference to other uses of such land or minimal impact to the environment. We believe it to be desirable that certain discretionary powers remain with the applicable governmental department. This rule should be qualified to allow the Secretary to issue leases on these lands under terms and conditions prescribed by the Secretary when he finds that it is in the public interest to do so.

Geothermal development could certainly be compatible with recreational lands and in the event we are not, alternate recreational lands could be set aside. For this reason, we believe that item (b) should be deleted.

3201.2 - Acreage limitations.

We suggest adding a provision to this section as follows:

- "(d) All productive leases or leases operated under approved operating, drilling or development contracts or a combination for joint operation and interest thereunder, or all leases committed to any unit or cooperative plan approved or prescribed by the Supervisor shall be excepted in determining holdings or control for purposes of acreage chargeability."

Under provisions 3244.2 and 3244.4-3 exception to chargeability as to unit plans and joint operations are provided and we feel that producing leases should be considered also as an exception to acreage chargeability. An acreage limitation is intended to stimulate competition. A successful producer would work himself out of a job and be penalized in his exploration efforts. In that event, the people are the loser, because the producer is no longer allowed to compete after he has producing lands totaling 20,480 acres in any given State.

3202.2-1 - General.

(a) As to chargeability, the first 30-day period after the rules are adopted will be a critical time due to the amount of land that will be available for noncompetitive leasing and the uncertainty as to any applicant's success in acquiring leases. Therefore, if an applicant's award of leases places him over chargeability, a 30-day period would be granted to reduce acreage holdings to the chargeable limits. This clause as presently written severely limits a party from exploring for this resource. The change could be accomplished by the deletion of "and applications" on the fifth line of this section.

3203.1-5 - Conversion to mineral leases or mining claims.

This section should be clarified relating to (1) prior locations under the Act of 1872 (2) the lessee must have the right to produce and sell any locatable mineral, produced incidental to geothermal operations (3) in the event a location has not been filed prior to the issuance of a geothermal lease, the lessee should have a preemptive right to locate as against third parties during the term of the lease.

3203.5 - Diligent exploration.

This new rule should be deleted in its entirety, since it imposes requirements on the lessee which are totally contrary to the intent of Congress and the Geothermal Steam Act of 1970. The requirement is subjective and can lead to disputes and litigation. We feel that if it was the intent of Congress to impose a work program on the lessee of the geothermal leases, it would have been explicitly stated in the Act. We are unable to find any precedent or authority which vests the Department with the power to determine such a program, and we vigorously object to these requirements. It requires a tremendous amount of paper work which must be handled by both the lessee and lessor and which must be held confidential. In any event, if this rule is adopted, specific monetary standards should be set so that a party knows when he has fulfilled his obligations. It is unacceptable to have the nature of an exploration program left to the judgment of an individual Supervisor and the following should be deleted commencing on the eleventh line: "must be approved by the Supervisor" and insert "must be in accordance with the standards set out below".

3204.1 (c-5) - Noise Control.

Specific standards should be set for noise control as they have for air quality.

3204.1 - (d) - Sanitation and waste disposal.

This provision should be modified by deleting commencing on the fourth line "in a manner acceptable to the Supervisor." and insert "so that the lease premises are maintained in a clean and sanitary condition". The provision as it is now written, places an unusual and subjective burden on the Supervisor.

3204.1 (e) - Land subsidence, seismic activity.

We concur in the necessity to monitor land subsidence; however, the requirement to maintain monitoring operations for seismic activity is beyond the capability of most operators, since the seismic history of most areas which is needed to serve as a reference is inadequately known or is unavailable to industry and without this information a company would not be able to comply with this requirement. If it is determined desirable to maintain such a program, it should be carried out by the USGS or other groups capable of seismic monitoring or when the state of the art is properly developed.

3205.3-3 - Escalating rental rates.

We oppose the arbitrary method of escalating rentals and feel it should be a fixed sum as provided for under the Geothermal Steam Act of 1970. Therefore, we suggest that this provision be deleted from the regulations.

3210.1 - Availability of land.

The uncertainty that exists in the classification of lands as either KGRA or noncompetitive lands is a direct deterrent to exploration. The loose guide lines which are being established in the classification of lands make it most difficult for an operator to spend large sums of money in exploring for the geothermal resource when his avenue of acquiring leases is of such an uncertain nature. The Department should take a position which clearly defines the rules of classifying lands and not adopt the vague and uncertain definition with which we are now faced. It would appear to us that under the present rules a knowledgeable (Union Oil as operator of the only producing field in the United States would be considered knowledgeable) operator by his own act of filing several applications in any given area, would cause it automatically to be classified as a KGRA. An even greater deterrent to exploration would be the case in which an operator would conduct extensive exploration operations, file applications for noncompetitive leases and before the leases were issued, another operator could learn of the pending application and file his application for the same lands creating a competitive situation,

which again would cause the lands to become KGRA and require a competitive lease sale. These uncertainties should be eliminated by definite and concrete rules which would either cause all lands to be classified KGRA pending display of interest in them or set up guide lines that would insure an operator that by his filing for a noncompetitive lease he would be assured, barring unforeseen concrete development such as a discovery well being drilled, that the lands would remain noncompetitive and leases issued. For additional discussions on this point, please refer to our comments under 3200.0-5 (j).

We suggest the following provision be included in this section:

"(d) All applications will be held confidential until leases are issued."

We are making this request due to the potentially long period of time between the filing of applications for leases and the issuance of the lease. If the record of an application is available to the public for examination prior to the decision to lease the lands, it will give others an unfair advantage regarding the work and interest of the applicant. It could cause numerous other applications to be filed and the lands classified KGRA. This, of course, could be a deterrent to exploration, as many would not expend exploratory funds, but simply follow the efforts of others and capitalize on their exploration effort.

3210.2-1 - Applications.

(d) The fulfillment of this requirement is more appropriate after the discovery and prior to development. Obviously, lands which are not classified as KGRA are of an exploratory nature and very little information is available relating to the potential of the geothermal resources if in fact it exists. It would be most difficult to file a plan relating to roads, well locations, plant sites, pipelines, etc. before the resource has been discovered. It would be impossible to determine the spacing of wells prior to discovery since the size, nature and extent of the reservoir is unknown and the pattern of drilling can only be determined after the most efficient manner of producing the resource has been ascertained. Well spacing in turn will affect the location and distribution of plant sites. We suggest that this subparagraph (d) be deleted from this section of the regulations.

(e) We feel that "or applications" which appears on the third line of this subsection should be deleted. The number of acres which may be held by a party is so small that the applications which are on file pending the issuance of leases should not be counted in determining the party's chargeable acreage. If his applications during the "simultaneous filing period" should result in leases which would place him over chargeability, then he should have a short period of time in which to release the necessary amount of leases to bring his chargeability in line. See our comments under 3202.2-1.

3210.3 - Determination of priorities.

We are again faced with the threat of applications for noncompetitive lands causing the lands to be classified as KGRA. For additional discussions on this point, please refer to our comments under 3200.0-5 (j).

3210.4 - Rejections.

We again point out our fear of noncompetitive lands being classified as KGRA simply by the filing of applications. We also object to the last sentence of this provision which allows an authorized officer to reject an application without cause. This places arbitrary power in the hands of an officer. We feel an applicant should be awarded a lease if he meets the requirements imposed by these rules. We recommend the deletion of the last sentence of this section.

3220.4 - Contents of notice of lease sale.

The notice of sale should include a statement as to the parties who hold a preferential right (grandfather rights) to meet the high bid.

3245.1 - Relinquishments.

(b) 1. "Accruing" should be changed to read "accrued". Certainly a lessee would be responsible for all accrued payments, but not for future payments as to relinquished leases.

3245.4 - Removal of materials and supplies upon termination of lease.

The 90-day period should be enlarged to at least one year or provide the Supervisor with greater discretion in allowing time for removal of such major items as plants, pipelines, etc.

Geothermal Resources Operations on Public, Acquired
and Withdrawn Lands.

270.13 - Required samples, tests, and surveys.

Because not all surveys can be run at all times, we suggest inserting "practical" in the first line between "necessary" and "or".

270.37 - Well Records

(a) These requirements should be modified to provide that the record of a particular test or operation must be furnished only in the event that such test or operation is actually performed. This could be accomplished by inserting on the fifth line between "operations" and "production" the following "actually performed which may include".

(b) We suggest changing "30 days" which appears on the first line to read "90 days"; copies of our surveys on test are often not received within 30 days.

270.38 - Samples, Tests and Surveys.

(a) This provision should be limited to basic data and should not include interpretive data which is proprietary.

270.43 - Land subsidence and seismic activity.

See our comments under 3204.1 (e).

270.45 - Accidents.

This section needs clarification. Does this include industrial injuries, lost time accidents, auto accidents, or does it concern itself with accidents associated with the resource?

270.62 - Value of geothermal production for computing royalties.

(a) This provision allows the Supervisor to determine the value of production. This imposes an unequitable situation for the producer, if he has established the sale prices of the resource through arms-length negotiations with a third party. That sales price determines the value of the product in the market place. In the event a producer of the resource converts the energy into power himself, and no free market negotiation determined the value, this provision would apply.

(b) This provision reads ambiguously and we suggest that the following be deleted: "That amount which is the value of the end product", and insert "That portion of the value of the end product which is".

270.71 - Application for permit to drill, redrill, deepen, or plug-back

(d) This section should be deleted in its entirety because structural information is not pertinent in geothermal occurrences and the uncertainty of what constitutes hydrologic information.

270.72 - Sundry notices and reports on wells.

(f) We suggest that the portion of this section commencing on the fifth line which reads "notice of intention to abandon shall be filed with, and approved by, the Supervisor. The notice must be accompanied by a complete log, etc." be changed to read as follows: "Notice of intention to abandon shall be given to, and approved by, the Supervisor. Within two weeks thereafter, a written notice must be filed with the Supervisor accompanied by a complete log, etc." Delays in submitting requests and obtaining approval in writing from the Supervisor which may consume several days, places an undue financial burden upon the operator, since drilling operations at

\$5,000/day are not unusual in the geothermal industry. The Supervisor should be given the authority to give approval for abandonment over the phone to be followed by appropriate written reports.

270.73 - Log and history of well.

We suggest changing "30 days" which appears on line two to read "90 days". (See comment 270.37 (b))

270.74 - Monthly report of operations.

(e) This section requires that details for drilling wells be provided monthly. This is an unnecessary amount of work; particularly since it is necessary to provide a well history containing all of the information requested in this section when the well is completed. We suggest deletion of this subsection (e).

270.77 - Public inspection of records.

We do not feel that interpretative maps should be required data to submit and request that the word "interpretation" be deleted from the first and second lines of this section.

271.3 - Designation of area.

We call your attention to the misspelling of "Identified" which appears on the fifteenth line of this section.

271.9 - Filing of papers and number of counterparts.

(c) This provision should provide that the Department will keep this information confidential by adding the following language at the end of the paragraph: "which data will be kept confidential".

ARTICLE IV - Contraction and Expansion of Unit Area.

The sequential hook-up of power generating units in a geothermal field result in the sequential development of portions of the field. For example, there are areas within the productive portion of The Geysers field which will not be hooked-up until after 1977. We request that a provision be included which would allow the Supervisor to extend the 5-year period if the operator shows proper cause.

ARTICLE VI - Unit Operator.

6.1 Reference is made to the duties and obligations of the Unit Operator including distribution and utilization of Unitized Substances. This may very well have undesirable legal ramifications. We suggest the following provision be inserted on the seventh line following "provided": "however, each non-operator may elect to take his share of the production in kind and separately dispose of same".

ARTICLE X - Rights and Obligations of Unit Operator.

10.1 Reference is also made in this section to distributing and/or utilizing Unitized Substances. Comment made in Article 6.1 is applicable here.

10.5 This provision places a tremendous amount of power in the hands of the Supervisor and Director. The "rate of prospecting and development" and "the quantity and rate of production" referred to will be covered by the terms of private and federal geothermal leases or contracts with public utilities. This provision would give the Director the right to abrogate or override these contracts, which would be unacceptable to the utility companies and private landowners. This section should be deleted.

ARTICLE XI - Plan of Operations.

11.4 We call your attention to the omission of a blank space in the last line of this Article wherein the number of feet may be inserted.

11.6 Since the extension period that may be granted by the Supervisor is limited to one period, the Supervisor should not be confined to one four months extension, but should be allowed to grant any reasonable extension of time.

11.7 This provision deals with "actual production" of Unitized Substances and the penalties attached thereto. Due to the nature of the geothermal industry and the long period of time between discovery and installation of power generating facilities and thus commencement of "actual production", we feel that the requirement of "actual production" is too rigorous. We submit for consideration "actual production" be changed to "capable of production in paying quantities".

ARTICLE XVIII - Effective Date and Terms.

18.1 (b) We suggest that the following be inserted in the last line of this provision between "quantities" and "or".

(production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona-fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of this agreement).

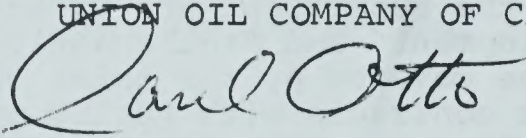
January 9, 1973

ARTICLE XXV - Subsequent Joinder.

We feel that the terms "substantial interest" should be defined.

Very truly yours,

UNION OIL COMPANY OF CALIFORNIA

A handwritten signature in dark ink, appearing to read "Carel Otte". The signature is fluid and cursive, with the first name "Carel" and last name "Otte" clearly distinguishable.

Carel Otte

CO:myb



#52

TELEPHONE: 293-7300
(AREA CODE 202)

UNITED STATES CONFERENCE OF MAYORS

1612 K STREET NORTHWEST

WASHINGTON, D. C. 20006

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Mayor of Los Angeles*Executive Director:*

JOHN J. GUNTHER

January 5, 1973

Comments on Department of the Interior's "Geothermal Resources Operations on Public, Acquired and Withdrawn Lands," ACIR Ref. No. 72-95

Our comments reflect upon the Department of the Interior's isolated view of geothermal resources. Such operations must be considered within the scope of the total environmental system, so that the relationship to other facets may be determined.

In reference to Section 270.34, Plan of Operation, the lessee should submit to the supervisor a plan which would detail compliance with local requirements applicable to the operations.

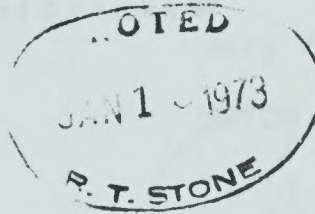
Section 270.41, Pollution, should also require compliance with local standards, in addition to Federal and state standards.

Section 270.44, Pits and Sumps require that the aforementioned be re-stored to a "near natural state," as prescribed by the supervisor. Such a requirement must be considered in light of its relationship to other environmental control programs, i.e., sanitary landfills or disposal of sewage sludge.

WESTERN GEOTHERMAL INC.
INTERNATIONAL BUILDING
ST. MARY'S SQUARE, SAN FRANCISCO

#34

January 12, 1973



Geothermal Co-ordinator
Room 7000
U.S. Department of the Interior
WASHINGTON, D.C. 20240

Gentlemen:

Subject: Geothermal Resources Leasing

Pursuant to your Release of November 29, 1972, inviting comments on the revised Regulations to govern the proposed lease of geothermal resources on public lands, as published in the Federal Register, Volume 37, No. 230, Part II and Part III, dated November 29, 1972, we offer the following comments:

Subpart 3200.0 (j)

It would appear that the criteria for designating Known Geothermal Resources Areas, (KGRA), are not specific enough to definitively differentiate from non-KGRA's. It would even appear that in the event that two or more parties apply for a lease on an area, it might automatically fall in the category of a KGRA. It is suggested that in view of the difficulties in differentiating between a KGRA and a non-KGRA, consideration might be given to eliminating the KGRA classification entirely, and designating only one type of lease for which applications can be made.

Subpart 3203.2 and Subpart 3230

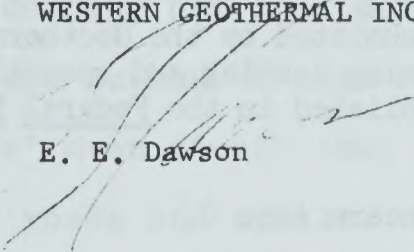
This deals with lease acreage limitation. The mechanics of arriving at lease acreage limitations is not entirely clear in this Subpart. One specific point involved here is how acreage limitations, in the event of exercise of rights to conversion, as provided for in Subpart 3230, are handled. For example, if Grandfather Rights are exercised, entitling an applicant to something less than 1280 acres, can the applicant apply for a small parcel of adjacent area to total 1280 acres, or can he simply hold the conversion acreage without applying for additional acreage? Further, can non-contiguous parcels in the same general area be combined to make up the 1280 acre minimum?

Subpart 3210.1 and Subpart 3210.3

The procedure for application for non-competitive leases provides that applications to lease the same lands which are filed between the effective date of these Regulations and thirty days following that time will be considered to have been filed simultaneously. This Subpart goes on to provide that the right of

priority to a non-competitive geothermal lease, among those persons simultaneously filing, will be determined by a public drawing. It is suggested that further consideration be given to this procedure for awarding of non-competitive leases with the objective of possibly substituting experience in the geothermal industry for a public drawing procedure.

Very truly yours,
WESTERN GEOTHERMAL INC.


E. E. Dawson

EED/fmb

WESTERN OIL AND GAS ASSOCIATION

609 SOUTH GRAND AVENUE • LOS ANGELES, CALIFORNIA 90017

(213) 624-6386

#16

December 27, 1972

Geothermal Coordinator
Department of the Interior
Washington, D.C. 20240

Dear Sir:

Attached are comments submitted by the Geothermal Committee of this Association concerning leasing and operating regulations for geothermal resources published in the Federal Register Wednesday, November 29, 1972.

Our primary areas of concern are:

1. Section 1003 of the 1970 Act states "If the lands to be leased are not within any known geothermal resource area, the qualified person first making application for the lease shall be entitled to a lease of such lands without competitive bidding". In spite of this language, the regulations do not provide a viable system of noncompetitive leasing.

2. A lease for development of geothermal resources should carry with it the right to construct all needed facilities. The regulations do not provide for this. (3200.0-8)

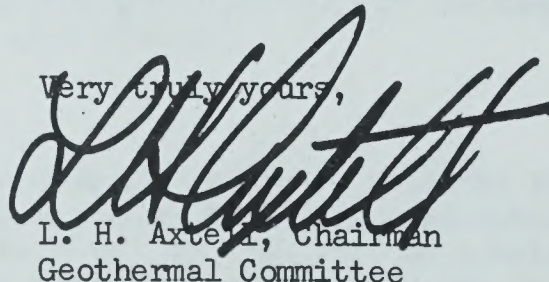
3. Unless lease applications are exempt from acreage limitations, no substantial geothermal leasing program can develop. (3203.2-1)

4. All references to "geothermal steam" should be expanded to read "geothermal steam and associated geothermal resources" as defined in 30 USC 1001(c). (3203.1-4)

5. We believe Subsection 3203.5 should be deleted as it constitutes an expansion of the Act by regulation and is not authorized by 30 USC 1004.

We thank you for this opportunity to comment on the proposed regulations.

Very truly yours,



L. H. Axtell, Chairman
Geothermal Committee

cc: V. E. McKelvey
W. A. Radlinski
R. G. Wayland
Frank Rogers (WOGA)

WESTERN OIL AND GAS ASSOCIATION COMMENTS - PROPOSED GEOTHERMAL RESOURCES
REGULATIONS - LEASING ON PUBLIC, ACQUIRED AND WITHDRAWN LANDS
43 CFR PARTS 3000, 3045, 3104, AND 3200

3045.0-5 Definitions.

The definition of "casual use" in (c) should be broadened to clearly permit geochemical and non-explosive geophysical surveys on public lands. At least one company has been denied access, for the conduct of such studies, by the Bureau of Land Management. We believe the surveys are a "casual use" even though they do involve some vehicle movement outside established roads and trails.

3045.1-1 Application.

In sub-part (b) (1), disclosure of the company for whom the operation will be conducted should not be required.

The information required in sub-parts (b) (3), (4) and (5) constitutes an important disclosure by the party proposing to conduct exploration activities. We believe it essential that this information be held on a confidential basis by the federal government.

3200.0-5 Definitions.

The last sentence of sub-part (g) should also provide for the location of a power plant or other facility. A broad general term such as "resource use facility" should be added to accomplish this.

Our understanding of sub-part (j) is that the filing of two applications for a non-competitive lease on the same lands will result in their being declared to be within a Known Geothermal Resource Area, and

that they would thus be offered for lease competitively. We do not believe that the words "competitive interest" necessarily mean multiple filings. To follow the procedures outlined in sub-part (j) is to penalize a company which, after spending substantial sums in exploration, locates what it believes to be a worth-while geothermal prospect. Its exploration activities, of course, will not go unnoticed and its filing for a non-competitive lease will unquestionably trigger one or more additional applications for the same land. It is quite conceivable that these additional applications will be filed by companies who have not made any exploration effort themselves, but whose plan is simply to force the creation of a competitive leasing situation.

If it is the intention of the Department to place all geothermal resource leasing on a competitive basis, then we believe that this policy should be established by seeking amendment of the 1970 Act. The present wording of the Act in subsection 1003 provides for both competitive and non-competitive leasing, but the language of the Act, like the regulations proposed in sub-part (j), is not clear.

We would prefer a clearly stated policy, reflected in regulation, providing for competitive and non-competitive leasing. With respect to the latter, the procedures followed should more closely parallel those presently in effect for oil and gas, thus avoiding the present proposed procedure wherein a company's own act of filing for a non-competitive lease can trigger one or more additional filings with a competitive leasing situation the final result.

3200.0-6 Preleasing Procedures.

Sub-part (b) provides for an extensive environmental evaluation.

While we have no objection to this procedure, a time constraint for its completion does appear essential. We would suggest that the review procedure be completed within a 90-day period. Overly long review, public hearings, etc. could well impede the growth of a new industry and a clean energy source.

3200.0-8 Use of Surface.

Sub-part (a), among other things, provides that any use of leased lands or other federal lands for a power generation plant site or commercial or industrial facility would be authorized only under a separate permit. We believe that a lease for the development of geothermal resources should carry with it the right to construct all needed facilities. While a power generation plant site is provided for in the current proposed language, no specific reference is made to facilities which would be required should the operation also include the production of associated geothermal resources.

3201.2 Acreage Limitations.

(See also 30 USC 1017 and 43 CFR 3244.4-3 Acreage Chargeability)

Sub-part (a) might be strengthened by the addition of language clearly stating what lands will be exempt from chargeability. The existing language in 3244.4-3 could be worked into sub-part (a) of this subsection.

We recommend that the last sentence of sub-part (c) commencing with words "No holding, etc." be eliminated. Its retention would prevent a company or an individual from holding 40,960 acres "in common" with

another company or individual. Thus, the present language would rescind privileges specifically granted in sub-part (b).

3202.2-1 General.

In sub-part (a) we suggest deletion of the word "application" appearing in the second line. We suggest that a specific provision be added here which would provide that an individual, company, or association could file on as much acreage as they desired within the first 30 days following publication of the regulations in their final form. If said individual, company or association is awarded leases in excess of allowable chargeability a specified number of days would be provided to allow the individual, company, or association to quitclaim acreage so as to bring their holdings in any one state to the allowable 20,480-acre limit. This matter is of such importance that it is our belief that the entire filing program will be unable to "get off the ground" if the reference to applications remains in sub-part (a).

3203.1-3 Additional Term.

In sub-part (a) change all references from "geothermal steam" to "geothermal steam and associated geothermal resources." Follow the same procedure in sub-part (b).

3203.1-4 Extensions.

In sub-part (a) change the reference from "geothermal steam" to "geothermal steam and associated geothermal resources." In sub-parts (b), (c), and (d), change all references from "geothermal steam" to "geothermal steam and associated geothermal resources."

3203.5 Diligent Exploration.

We believe this entire subsection should be deleted in that it constitutes an expansion of the Act by regulation. This expansion, in our opinion, is not authorized by 30 USC 1004. We also object to the reference to "diligent exploration" found in subsection 3210.2-1(d).

3205.3 Escalating Rental Rates.

We object to the escalating rental rates called for in this subsection. Its retention in the regulations can only serve to inhibit the growth of a geothermal resources industry. This is in direct conflict with the stated national policy calling for development of new energy resources. If the development of geothermal resources could now be considered a "proven industry" we would feel less keenly about the provisions of subsection 3205.3. Based on present conditions, however, the escalating rental rate requirement can only serve to discourage potential participants in geothermal exploration. Without the widest possible participation in exploration and leasing a geothermal industry cannot hope to arise. We urge that this subsection be eliminated.

3210.1 Availability of Land.

Our earlier comments on subsection 3200.0-5 apply here as well. There must either be amendment of the Act to provide across the board competitive leasing or there must be a reasonable non-competitive leasing procedure similar to that presently in effect for oil and gas.

3210.2-1 Application.

In sub-part (d) delete the reference to "diligent exploration"

(see our comments on 3203.5). With respect to the last paragraph of (d) we do not believe that the time of application is the proper time to require the "narrative statement" outlined. Such statement would appear more reasonable if it was required to be filed after award of a lease.

In sub-part (e) the words "or applications" should be deleted on the grounds that applications should be exempt from chargeability.

3210.4 Rejections.

We recommend that the last sentence be deleted or that language be added providing that "rejection" can only be made under findings derived from 3200.0-6 or 3202. In essence, the rejection should be justified under specific criteria.

3230.3-2 Statements Required.

Language should be added to (c) (3) describing the type of data and the amount of detailed information requested.

3243.1 General.

Change the reference in lines 2 and 3 from "geothermal steam" to "geothermal steam and associated geothermal resources."

3245.4 Removal of Materials and Supplies Upon Termination of Lease.

The 90-day period is insufficient. We suggest elimination of the words "ninety (90) days" in line 5 and substitution therefore of the words "one year." A 90-day period is insufficient as it may be necessary to remove substantial resource utilization facilities.

COMMENTS ON OPERATING REGULATIONS 30 CFR PARTS 270 AND 271

270.16 Values and Payment for Losses; also, 270.60 Measurement of Geothermal Resources and 270.33 (a) Drilling and Producing Obligations.

In establishing criteria for "value" the sales price is the market value and, in our opinion, is the best determination of value. Thus, we suggest that the total consideration received by the lessee for the sale of the particular commodity under discussion is the best approach and that this philosophy should carry through into all applicable discussions of value.

270.37 Well Records.

In sub-part (a), in line 10, following the word "abandoning" add the words "if performed."

In sub-part (b) we recommend that "60" days, rather than 30 days, be allowed the operator to transmit copies of records to the Supervisor.

271.9 Filing of Papers and Number of Counterparts.

We believe that a new sub-part (e) should be added which clearly states that papers, instruments, and documents submitted under this part shall be held confidential until the unit to which they pertain is terminated.

271.12 Form of Unit Agreement for Unproved Areas.

Article IV Contraction and Expansion of Unit Area; Sub-part 4.3.

In view of the 2-5 year lead time required in the development of

a geothermal resource, we do not feel that the five-year automatic contraction provision is adequate. We urge that a longer period be provided or language inserted which would give the Supervisor authority to extend the period following a proper showing by the operator.

Article X Rights and Obligations of Unit Operator, Sub-part 10.5.

We are concerned that the discretion given the Director to alter or modify the rate of prospecting and development, as well as the quantity and rate of production, could lead to a situation where the Director, in the exercise of this authority might override or abrogate the specific provisions of an operator's contract with a public utility.

* * *

APPENDICES E AND F

APPENDIX E - July 23, 1971 Proposed Regulations for Geothermal Resource Leasing and Operations on Public, Acquired and Withdrawn Lands

May 3, 1972 supplement - Geothermal Resources Operations on Public, Acquired and Withdrawn Lands

APPENDIX F - Summary of Comments and Departmental Responses

1. Geothermal Leasing Regulations of July 23, 1971
2. Geothermal Operating Regulations of July 23, 1971
3. Geothermal Unit Plan Regulations of May 3, 1972

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PART II

DEPARTMENT OF THE INTERIOR

■

Geothermal Resources Leasing and Operations on Public, Acquired, and Withdrawn Lands

■

Notice of Proposed Rule Making

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[43 CFR 3000, 3045, 3104, 3200]

GEOTHERMAL RESOURCES LEASING AND OPERATIONS ON PUBLIC, AC- QUIRED, AND WITHDRAWN LANDS

Notice of Proposed Rule Making

The purpose of this proposed rule making is to implement the Geothermal Steam Act of December 24, 1970 (84 Stat. 1566). That Act provides for the leasing of public lands for geothermal resource exploration, development, and production.

Environmental statements will be prepared and disseminated in accordance with the provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. Part 4332(2)(C) (Supp. V., 1965-69)), prior to the promulgation of any leasing and operating regulations.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rule-making process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, D.C. 20240, within 60 days of the date of publication of this notice in the *FEDERAL REGISTER*.

1. Section 3000.0-5 of Subpart 3000, Chapter II, Title 43 of the Code of Federal Regulations is revised to read as follows:

§ 3000.0-5 Definitions.

As used in this subchapter the following terms shall mean as follows:

(a) "Leasable minerals." (1) Oil and gas. (i) Gas, any fluid, either combustible or noncombustible, which is produced in a natural state from the earth and which maintains a gaseous or rarefied state at ordinary temperature and pressure conditions. (ii) Oil, crude oil, any liquid hydrocarbon substance which occurs naturally in the earth, including drip gasoline or other natural condensates recovered from gas, without resort to manufacturing process.

(b) "Geothermal resources" means geothermal steam and associated geothermal resources which include: (1) All products of geothermal processes, embracing indigenous steam, hot water and hot brines; (2) steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated energy found in geothermal formations; and (4) any byproducts derived from them.

(c) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium) which are found in solution or developed in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical

difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(d) "Known geothermal resource areas" (KGRA) means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose. Any relevant data and information pertaining to the criteria, including without limitation any pertinent engineering and economic data, may be considered in classifying land for inclusion in a KGRA.

(e) "Other leasable minerals." (1) Coal, chlorides, sulphates, carbonates, borates, silicates, or nitrates of potassium and sodium; sulphur in the States of Louisiana and New Mexico; phosphate; and native asphalt, solid and semisolid bitumen and bituminous rock (including oil impregnated rock or sands from which oil is recoverable only by special treatment after the deposit is mined or quarried). (2) Solid (hardrock) minerals; minerals in acquired lands which would be subject to location under the U.S. mining laws if located in the public domain lands.

(f) "Secretary." The Secretary of the Interior or any person duly authorized to exercise the powers vested in that officer.

(g) "Director." The Director of the Bureau of Land Management or any person duly authorized to exercise the powers vested in that officer.

(h) "State Director." The Director of a Bureau of Land Management State office.

(i) "Authorized officer" means any person authorized by law or by lawful delegation of authority in the Bureau of Land Management to perform the duties described.

(j) "Proper BLM office" means the Bureau of Land Management office having jurisdiction over the leased lands or lands subject to lease.

(k) "Commercial quantities" shall mean quantities sufficient to pay a profit after all costs of production have been met.

(l) "Public domain lands." Original public domain lands which have never left Federal ownership; also, lands in Federal ownership which were obtained by the Government in exchange for public lands or for timber on such lands; also original public domain lands which have reverted to Federal ownership through operation of the public land laws.

(m) "Acquired lands." Lands which the United States obtains by deed through purchase or gift, or through condemnation proceedings. They are distinguished from public domain lands in that acquired lands may or may not have been originally owned by the Government. If originally owned by the Gov-

ernment such lands have been disposed of (patented) under the public land laws and thereafter reacquired by the United States.

(n) "Other lands" (1) "Withdrawn lands." Lands which have been withdrawn and dedicated to public purposes. (2) "Reserved lands." Lands which have been withdrawn from disposal and dedicated to a specific public purpose. (3) "Segregated lands." Lands included in a withdrawal or in an application or entry which segregates them from operation of the public land laws.

2. Subpart 3045 of Chapter II, Title 43 of the Code of Federal Regulations is amended by substituting the words "oil and gas, or geothermal resources" for "oil and gas" wherever they appear throughout the Subpart. As revised Subpart 3045 reads as follows:

Subpart 3045—Geophysical Exploration Operations (Oil and Gas or Geothermal Resources)

3045.0-1 Purposes.

3045.0-5 Definitions.

3045.0-7 Cross references.

3045.1 Notice of intent to conduct oil and gas or geothermal resources operations.

3045.1-1 Application.

3045.2 Completion of operations.

3045.3 Bond requirements.

§ 3045.0-1 Purposes.

The purpose of the regulations in this Subpart 3045 is to establish procedures to be followed in conducting exploration of the public land for oil and gas or geothermal resources. For exploratory operations for other leasable minerals, the lease or permit required by the appropriate regulations must be secured. The regulations in this subpart are not applicable to exploration operations conducted pursuant to oil and gas or geothermal resources lease, and also are not applicable to the exploration of public domain lands for minerals subject to location under the U.S. mining laws.

§ 3045.0-5 Definitions.

For the purpose of the regulations in this subpart:

(a) "Oil and gas or geothermal resources exploration" means any activity relating to the search for evidence of oil and gas or geothermal resources which requires physical presence upon the land and which may result in damage to public lands or resources thereon. It includes, but is not limited to, geophysical operations, construction of roads and trails, and cross-country transit by vehicle over public domain. It does not include the casual use of public lands for oil and gas or geothermal resources exploration. It does not include core drilling for subsurface geologic information or drilling for oil and gas or geothermal resources; these activities will only be authorized by the issuance of an oil and gas or geothermal resources lease. The regulations in this subpart, however, are not intended to prevent drilling operations necessary for placing explosive charges for seismic exploration, nor do they affect the exclusive right to "drill" for oil and gas or

geothermal resources by a lessee upon his leased premises.

(b) "Public lands" means lands owned by the United States and administered by the Bureau of Land Management. It does not include retained mineral interest in lands, title to which has passed from the United States.

(c) "Casual use" means activities that involve practices which do not ordinarily lead to any appreciable disturbance or damage to lands, resources, and improvements. For example, activities which do not involve use of heavy equipment or explosives and which do not involve vehicle movement except over established roads and trails are "casual use."

§ 3045.0-7 Cross-references.

43 CFR 3104.9.
43 CFR 3104.15.

§ 3045.1 Notice of intent to conduct oil and gas or geothermal resources operations.

§ 3045.1-1 Application.

(a) *Forms and where filed.* Any person desiring to conduct oil and gas or geothermal resources exploration operations under the regulations of this subpart shall, prior to entry upon the lands, file with the District Manager of the Bureau of Land Management for the district in which the public lands are located a "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations," on a form approved by the Director.

(b) *Requirements.* The "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" will contain the following:

(1) The name and address, including zip code, both of the person, association, or corporation for whom the operations will be conducted and of the person who will be in charge of the actual exploration activities.

(2) A statement that the signers agree that exploration operations will be conducted pursuant to the terms and conditions listed on the approved form.

(3) A brief description of the type of operations which will be undertaken.

(4) A description of the lands to be explored, by township and range.

(5) Approximate date of commencement of operations.

§ 3045.2 Completion of operations.

Upon completion of the exploratory operations, there shall be filed with the District Manager a "Notice of Completion of Oil and Gas or Geothermal Resources Exploration Operations." Within 90 days after the filing of such "Notice of Completion," the District Manager shall notify the party who had conducted the operations whether all of the terms and conditions set out by the regulations in this subpart and in the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" have been complied with, or whether any additional measures must be taken to rectify any damage

to the land, specifying the nature and extent thereof.

§ 3045.3 Bond requirements.

(a) Amount of bond and when filed (see 3104.9).

(b) Termination of period of liability (see 3104.9-5).

3. Sections 3104.9, 3104.9-1, and 3104.9-5 of Subpart 3104, Chapter II, Title 43 of the Code of Federal Regulations are amended by substituting the words "oil and gas, or geothermal resources" for "oil and gas" wherever they appear throughout. As revised these sections read as follows:

§ 3104.9 Exploration bond.

(a) *Individual.* Simultaneously with the filing of the Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations, and before the entry is made on the land, the party or parties filing the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" must file with the District Manager a surety company bond in the amount of \$5,000, conditioned upon the full and faithful compliance, for each oil and gas or geothermal resources exploration operation, with all of the terms and conditions of the regulations in this subpart and of that notice.

(b) *Nationwide.* A \$50,000 nationwide bond.

(c) *Statewide.* A statewide bond in the amount of \$25,000 covering all oil and gas or geothermal Resources exploration operations in the same State.

§ 3104.9-1 Riders to existing bond forms.

(a) *Nationwide and statewide bonds.* Holders of nationwide and statewide oil and gas or Geothermal Resources lease bonds shall be permitted to amend their bonds to include exploration activities in lieu of furnishing additional bonds.

§ 3104.9-5 Termination of period of liability.

The District Manager will not give his consent to the cancellation of the bond if an individual bond was submitted, or to the termination of liability if a State or nationwide bond was submitted, unless and until all of the terms and conditions of the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" have been complied with. Should the District Manager or any other authorized officer of the Bureau of Land Management fail to notify the party within 90 days from the filing of "Notice of Completion" that all terms and conditions have been complied with or that additional corrective measures must be taken to rehabilitate the land, liability under an individual bond or liability for a particular oil and gas or geothermal resources exploration operation under a State or nationwide bond shall automatically terminate on the 91st day.

4. A new Group 3200 is added to Chapter II, Title 43 of the Code of Federal Regulations to read as follows:

Group 3200—Geothermal Resources Leasing

PART 3200—GEOTHERMAL RESOURCES LEASING; GENERAL

Subpart 3200—Geothermal Resources Leasing; General

Sec.
3200.0-3 Authority.
3200.0-5 Definitions.
3200.0-6 Preleasing procedures.
3200.0-7 Cross reference.

Subpart 3201—Available Lands; Limitations; Unit Agreements

3201.1 Lands subject to geothermal leasing.
3201.1-1 General.
3201.1-2 Department of the Interior.
3201.1-3 Department of Agriculture.
3201.1-4 Federal Power Commission.
3201.1-5 Patented lands.
3201.1-6 Excepted areas.
3201.2 Acreage limitations.
3201.3 Leases within unit areas.

Subpart 3202—Qualifications of Lessees

3202.1 Who may hold leases.
3202.2 Statements required to be submitted.
3202.2-1 General.
3202.2-2 Municipalities.
3202.2-3 Guardian or trustee.
3202.2-4 Attorney-in-fact.
3202.2-5 Evidence previously filed.
3202.2-6 Death of applicant.
3202.2-7 Showing as to sole party in interest.

Subpart 3203—Leasing Terms

3203.1 Primary and additional term.
3203.1-1 Dating of leases.
3203.1-2 Primary term.
3203.1-3 Additional term.
3203.1-4 Renewals.
3203.1-5 Extensions.
3203.1-6 Conversion to mineral leases or mining claims.
3203.2 Lease acreage limitation.
3203.3 Consolidation of units.
3203.4 Description of lands.

Subpart 3204—Surface Management Requirements; Special Requirements

3204.1 General.
3204.2 Waste prevention.
3204.3 Readjustment of terms and conditions.
3204.4 Reservation to the United States of oil, hydrocarbon gas, and helium.
3204.5 Compensation for drainage; compensatory royalty.
3204.6 Patented lands.

Subpart 3205—Service Charges, Rentals and Royalties

3205.1 Payments.
3205.1-1 Form of remittance.
3205.1-2 Where submitted.
3205.2 Service charges.
3205.3 Rentals and royalties.
3205.3-1 Payment with application.
3205.3-2 Payment of annual rental.
3205.3-3 Escalating rental rates.
3205.3-4 Fractional interests.
3205.3-5 Royalty on production.
3205.3-6 Royalty on commercially demineralized water.
3205.3-7 Waiver, suspension or reduction of rental or royalty.
3205.3-8 Application for and effect of suspension of operations and production.
3205.3-9 Readjustments.

Subpart 3206—Lease Bonds

- 3206.1 Types of bonds and filing.
- 3206.1-1 Types of bonds.
- 3206.1-2 Filing of bonds.
- 3206.2 Termination of period of liability.
- 3206.3 Operators bond.
- 3206.4 Qualified corporate sureties.
- 3206.5 Nationwide bond.
- 3206.6 Statewide bond.
- 3206.7 Default.
- 3206.7-1 Payment by surety.
- 3206.7-2 Penalty.
- 3206.8 Applicability of provisions to existing bonds.

Subpart 3200—Geothermal Resources Leasing; General**§ 3200.0-3 Authority.**

These regulations are issued pursuant to the Geothermal Steam Act of 1970 (84 Stat. 1566), and rights to develop and utilize geothermal resources in land subject to these regulations may be acquired only in accordance with these regulations.

§ 3200.0-5 Definitions.

As used in Group 3200, the term:

(a) "The Act" means the Geothermal Steam Act of 1970;

(b) "Geothermal lease" means a lease issued under authority of the Act;

(c) "Sole party in interest" means a party who is and will be vested with all legal and equitable rights under the lease. No one is, or shall be deemed to be, a sole party in interest with respect to a lease in which any other party has any interest in the lease;

(d) "Interest in the lease" means any interest whatever in a geothermal lease, including, but not limited to: A record title interest; a working interest; an operating right; a claim to any prospective or future advantage or benefit from a lease; a participation in any increment, issue, or profit which may be derived, or accrue in any manner, from the lease based upon, or pursuant to, any agreement or understanding in existence at the time when the offer is filed; and an agreement pertaining to any of the foregoing;

(e) "Supervisor" means a representative of the Secretary under administrative direction of the Director, Geological Survey, through the Chief, Conservation Division, authorized and empowered to regulate operations and to perform other duties prescribed in the regulations in this part, or any subordinate of such representative acting under his direction.

§ 3200.0-6 Preleasing procedures.

(a) When an area is initially considered for geothermal leasing or when the need arises, the Director shall request other interested Bureaus and Federal agencies to prepare reports describing, to the extent known, resources contained within the general area and the potential effect of mineral operations upon the resources of the area and its total environment.

(b) The Director, prior to the final selection of tracts for leasing, shall, when appropriate, evaluate fully the potential

effect of the leasing program on the total environment, fish and other aquatic resources, wildlife habitat and populations, esthetics, recreation, and other resources in the entire area during exploratory, developmental, and operational phases. To aid him in his evaluation and selection of tracts he may request and consider the views and recommendations of appropriate Federal agencies, may hold public hearings after appropriate notice, and may consult with State agencies, organizations, industries, and individuals, and shall consider all other potential uses of the land and its natural resources. The Director shall develop special terms and conditions to be included in leases when they are needed to protect the environment, to permit use of the land for other purposes, and to protect other natural resources; any terms and conditions to be included in leases shall be published in the notice announcing the availability of the land for leasing.

§ 3200.0-7 Cross reference.

(a) The regulations governing operations under geothermal leases are found in 30 CFR Part 270.

(b) The regulations setting forth the basic policies for management of the public lands are found in Part 1725 of this chapter.

§ 3200.0-8 Use of surface.

(a) A lessee shall be entitled to use only so much of the surface of the lands covered by his lease as may be found by the Supervisor to be necessary for the production, utilization, and conservation of geothermal resources. Any use of the surface for a power generation plant or a commercial or industrial facility will be authorized only under a separate permit issued by the Secretary for that specific use and subject to all terms and conditions which he may include in that permit. The lessee shall not be entitled to use any mineral materials subject to the Materials Act except as provided by Part 3600 of this chapter.

(b) Operations under other leases or uses on the same lands shall not unreasonably interfere with or endanger operations under leases issued under these regulations nor shall operations under these regulations unreasonably interfere with or endanger operations under any lease, license, claim, permit, or other authorized use pursuant to the provisions of any other Act.

Subpart 3201—Available Lands; Limitations, Unit Agreements**§ 3201.1 Lands subject to geothermal leasing.****§ 3201.1-1 General.**

Subject to the exceptions listed below, geothermal leases may be issued for (a) lands administered by the Secretary of the Interior; (b) national forest lands or other lands administered by the Department of Agriculture through the Forest Service; and (c) geothermal resources in lands which have been conveyed by the United States subject to a reservation

to the United States of geothermal resources.

§ 3201.1-2 Department of the Interior.

(a) Except as provided in this section, leases may be issued in accordance with the regulations in this part for withdrawn lands, for acquired lands, and for geothermal resources in lands which have passed from Federal ownership subject to a reservation to the United States of the geothermal resources therein where such lands or resources are administered by the Secretary of the Interior.

(b) Notwithstanding any other provision in these regulations, geothermal leases shall not be issued for: (1) Lands which the Secretary has identified or may identify as being necessary to the performance of his or any other Federal agency's authorized functions, and on which geothermal resource development would interfere with such functions in his judgment; or (2) lands respecting which the Secretary has made or may make a finding that the issuance of geothermal leases would be contrary to the public interest. Upon receipt of an application for a geothermal lease affecting lands withdrawn under section 3 of the Reclamation Act of 1902 (43 U.S.C. § 416) or any other appropriate authority, notice thereof and an opportunity to comment thereon shall be given to the head of the agency for whose benefit the withdrawal was made. Where leases are issued under Part 3210 or 3220 for lands neighboring such reserved lands, the lessees shall be required to perform such lease operations and take such measures as are prescribed by the Secretary for the protection of the Federal interests therein. Stipulations for this purpose will be incorporated in any applicable leases.

§ 3201.1-3 Department of Agriculture.

Leases for lands withdrawn or acquired in aid of functions of the Department of Agriculture, for example, lands administered by the Forest Service, may be issued by the Secretary of the Interior only with the consent of, and subject to such terms and conditions as may be prescribed by, the head of that Department to insure adequate utilization of the lands for the purpose for which they were withdrawn or acquired.

§ 3201.1-4 Federal Power Commission.

Leases for lands to which section 24 of the Federal Power Act, as amended (16 U.S.C. 818), is applicable, may be issued by the Secretary of the Interior only with the consent of, and subject to, such terms and conditions as the Federal Power Commission may prescribe to insure adequate utilization of such lands for power and related purposes.

§ 3201.1-5 Patented lands.

(a) Except as provided in paragraph (b) of this section, geothermal resources in lands which have passed from Federal ownership subject to reservation to the United States of the geothermal resources therein may be leased under the regulations in this group subject to the provisions in this part and to such terms

and conditions as may be prescribed by the authorized officer to insure adequate protection of the surface and any improvements thereon.

(b) Geothermal resources in lands the surface of which has passed from Federal ownership but in which the minerals have been reserved to the United States shall not be leased under this group unless the question of the title to such resources has been resolved favorably to the United States pursuant to the provisions of section 21(b) of the Act.

§ 3201.1-6 Excepted areas.

Leases shall not be issued for lands which are: (1) Administered under the National Park System; (2) within a national recreation area; (3) in a fish hatchery administered by the Secretary, wildlife refuge, wildlife range, game range, wildlife management area, or waterfowl production area, or for lands acquired or reserved for the protection and conservation of fish and wildlife which are threatened with extinction; or (4) tribally or individually owned Indian trust or restricted lands, within or without the boundaries of Indian reservations.

§ 3201.2 Acreage limitations.

(a) No person, association, or corporation shall take, hold, own, or control at one time, whether acquired directly from the Secretary or otherwise, any direct or indirect interest in Federal leases in any one State exceeding 20,480 acres. Nor may any person, association, or corporation be permitted to convert mineral leases, permits, applications therefor, or mining claims, pursuant to the provisions of section 4 (a)-(f) of the Act into geothermal leases for more than 10,240 acres.

(b) In computing acreage holdings or control, the accountable acreage of a party owning an undivided interest in a lease shall be that party's proportionate part of the total lease acreage. Likewise, the accountable acreage of a party owning an interest in a corporation or association shall be his proportionate part of the corporation's or association's accountable acreage except that no person shall be charged with his pro rata share of any acreage holdings of any association or corporation unless he is the beneficial owner of more than 10 per centum of the stock or other instruments of ownership or control of that association or corporation. Parties owning a royalty or other interest determined by or payable out of a percentage of production from a lease will be charged with a similar percentage of the total lease acreage.

(c) An association shall not be deemed to exist between the parties to a contract for development of leased lands, whether or not coupled with an interest in the lease, nor between colessees, but each party to any such contract or each colessee will be charged with his proportionate interest in the lease. No holding of acreage in common by the same persons in excess of the maximum acreage specified in the law for any one lessee will be permitted.

§ 3201.3 Leases within unit areas.

Before issuance of a geothermal lease for lands within an approved unit agreement, the lease applicant or successful bidder will be required to file evidence that he has entered into an agreement with the unit operator for the development and operation of the lands in a lease if issued to him under and pursuant to the terms and provisions of the approved unit agreement, or a statement giving satisfactory reasons for the failure to enter into such agreement. If such statement is acceptable, he will be permitted to operate independently but will be required to conform to the terms and provisions of the agreement with respect to such operations.

Subpart 3202—Qualifications of Lessees

§ 3202.1 Who may hold leases.

Leases may be issued only to: (1) Citizens of the United States; (2) associations of such citizens; (3) corporations organized under the laws of the United States, any State or the District of Columbia; or (4) governmental units, including, without limitation, municipalities. The term "association" includes a partnership.

§ 3202.2 Statements required to be submitted.

§ 3202.2-1 General.

(a) Each applicant for a lease is required to submit with his application a statement that his interests, direct and indirect, in Federal geothermal leases, and applications, do not exceed the acreage limitations prescribed in § 3201.2, together with a statement of his citizenship.

(b) If the applicant is an association or corporation, the application must be accompanied by: (1) A statement showing that it is authorized to hold geothermal leases; (2) a statement that the officer executing the application is authorized to act on behalf of the association or corporation; and (3) a certified copy of articles of association or incorporation.

§ 3202.2-2 Municipalities.

A municipality must submit evidence (a) that it is authorized to hold a geothermal lease; and (b) that the action proposed has been authorized by its governing body.

§ 3202.2-3 Guardian or trustee.

(a) *Guardian.* If the application is made by a guardian, he must submit: (1) A certified copy of the court order authorizing him to act as guardian and, in behalf of his ward, to enter into contractual agreements and to fulfill all obligations arising under the lease; and (2) statements as to the citizenship and holdings under the Act of himself and of each person under his guardianship for whom the offer or nomination is made.

(b) *Trustee.* If the application is made by a trustee, he must submit a copy of the instrument establishing the trust or a certified copy of the court order au-

thorizing him to act as trustee, in behalf of the beneficiary, as to all obligations arising under the lease; and statements as to the citizenship and holdings under the Act of himself and of each beneficiary.

§ 3202.2-4 Attorney-in-fact.

If an application is filed by an attorney-in-fact, it must be accompanied by evidence as to his authority to act.

§ 3202.2-5 Evidence previously filed.

Where the statements required by § 3202.2 have been previously filed a reference by serial number to the record in which they have been filed, together with a statement as to any amendments will be accepted.

§ 3202.2-6 Death of applicant.

If an applicant or nominator or a successful bidder dies before the lease is issued, the application or nomination will automatically terminate or the bid will be rejected.

§ 3202.2-7 Showing as to sole party in interest.

Each application must be accompanied either by a signed statement by the applicant that he is the sole party in interest, or by a signed statement by the applicant setting forth the names of all other persons who have an interest in the lease and their qualifications to hold a lease.

Subpart 3203—Leasing Terms

§ 3203.1 Primary and additional term.

§ 3203.1-1 Dating of leases.

All geothermal leases will be dated as of the first day of the month following the date on which the leases are signed on behalf of the lessor except that, where prior written request has been made, a lease may be dated as of the first day of the month within which it is so signed. A renewal lease will be dated from the termination of the original lease.

§ 3203.1-2 Primary term.

All leases shall be for a primary term of 10 years.

§ 3203.1-3 Additional term.

(a) If geothermal steam is produced or utilized in commercial quantities within the primary term of a lease, that lease shall continue for so long thereafter as geothermal steam is produced or utilized in commercial quantities, but the lease shall in no event continue for more than 40 years after the end of the primary term.

(b) For the purposes of paragraph (a) of this section, production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of commencement of the primary term of the lease.

§ 3203.1-4 Renewals.

If, at the end of 40 years after the conclusion of the primary term, steam is being produced or utilized in commercial quantities and the lands are not needed for other purposes, the lessee shall have a right to a renewal of the lease for a second 40-year term on such terms and conditions as the Secretary deems appropriate.

§ 3203.1-5 Extensions.

(a) A lease which has been extended by reason of production, or on which geothermal steam has been produced, and which has been determined by the Secretary to be incapable of further commercial production and utilization of geothermal steam may be further extended so long as one or more valuable byproducts are produced in commercial quantities but for not more than 5 years.

(b) The primary term of a lease may also be extended for a period of 5 years and so long thereafter as geothermal steam is produced or utilized in commercial quantities (but for not more than 35 years) where the lessee commenced actual drilling operations prior to the end of the primary term and those operations are being diligently prosecuted at that time.

(c) Any lease on which there has been a suspension of operations or production, or both, under 30 CFR § 270.17 shall be extended for a period equal to the period of suspension.

§ 3203.1-6 Conversion to mineral leases or mining claims.

(a) If the byproducts being produced in commercial quantities are leasable under the Mineral Leasing Act of February 25, 1920, as amended and supplemented (30 U.S.C. sections 181-287), or under the Mineral Leasing Act for Acquired Lands (30 U.S.C. sections 351-359), and the leasehold is primarily valuable for the production thereof, the lessee shall be entitled to convert his geothermal lease to a mineral lease under, and subject to all the terms and conditions of, the appropriate Act upon application at any time before expiration of the lease extension by reason of byproduct production.

(b) The lessee shall be entitled to locate under the mining laws all minerals which are not leasable and which would constitute a byproduct if commercial production or utilization of geothermal steam continued. The lessee in order to acquire the rights herein granted him shall complete the location of mineral claims within 90 days after the termination of the geothermal lease.

(c) Any lease converted under paragraph (a) of this section for the use of the surface of any mining claim location under paragraph (b) of this section for geothermal byproduct minerals affecting lands withdrawn or acquired in aid of a function of a Federal department or agency, including the Department of the Interior, shall be subject to such additional terms and conditions as may be prescribed by that department

or agency with respect to the additional operations or effects resulting from such conversion upon the utilization of the lands for the purpose for which they are administered.

§ 3203.2 Lease acreage limitation.

A geothermal lease may not embrace more than 2,560 acres in a reasonably compact area, except where a departure is occasioned by an irregular subdivision. In such event, the leased acreage may exceed 2,560 acres by an amount which is smaller than the amount by which the area would be less than 2,560 acres if the irregular subdivision were excluded. No lease will be issued for less than 1,280 acres, except at the discretion of the Secretary, or where a departure is occasioned by an irregular subdivision. In event of a departure, the leased acreage may be less than 1,280 acres by an amount which is smaller than the amount by which the area would be more than 1,280 acres if the irregular subdivision were added.

§ 3203.3 Consolidation of units.

Two or more contiguous leases issued to the same lessee may be consolidated if the total combined acreage does not exceed 2,560 acres. Except where a departure is occasioned by an irregular subdivision as stated in § 3203.2.

§ 3303.4 Description of lands.

Applications and nominations shall include a description of the lands sought to be included in a geothermal lease. If the lands have been surveyed under the public land rectangular system, each application or nomination shall describe the lands by legal subdivision, section, township, and range. If the lands have not been so surveyed, each application shall describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to a monument or to a prominent topographic feature. When protracted surveys have been approved and the effective date thereof published in the FEDERAL REGISTER, each application or nomination for lands shown on such protracted surveys, filed on or after such effective date, shall describe the lands according to the legal subdivision, section, township, and range shown on the approved protracted surveys.

Subpart 3204—Surface Management Requirements, Special Requirements**§ 3204.1 General.**

A lessee shall comply with and be bound by the following terms and conditions:

(a) *Equal employment opportunity.* To comply with Executive Order 11246, as amended, 30 F.R. 12319 (1965), and regulations issued pursuant thereto, 41 CFR Chapter 60 and Part 17 of this chapter.

(b) *Public access.* (1) To permit free and unrestricted public access to and

upon the leased lands for all lawful and proper purposes except in areas where such access would unduly interfere with operations under the lease or would constitute a hazard to health and safety. Determinations by a lessee to restrict access within the leased area, shall be subject to approval of the Supervisor.

(2) During construction, to regulate public access and vehicular traffic to protect the public, wildlife, and livestock from hazards associated with the project. For this purpose, the lessee shall provide warnings, fencing, flag men, barricades, and other safety measures as appropriate.

(c) *Pollution abatement.*—(1) *Pesticides and herbicides.* To comply with all rules issued by the Department of the Interior and the Environmental Protection Agency pertaining to the use of poisonous substances on public lands.

(2) *Water pollution.* To conduct lease operations and maintenance in a manner consistent with Federal and State water quality standards and public health and safety standards. Toxic materials shall not be released into any lake, water drainage, or underground water.

(3) *Air pollution.* To control emissions from operations in accordance with Federal and State air quality standards.

(4) *Erosion control.* To minimize disturbance to vegetation, drainage channels, and streambanks. The lessee shall employ such soil and resource conservation and protection measures on the leased lands as the Supervisor determines are necessary.

(5) *Noise control.* To control noise emissions from operations as directed by the Supervisor.

(d) *Sanitation and waste disposal.* To remove or dispose of all waste generated in connection with the operation in a manner acceptable to the Supervisor. The term "waste" as used in this stipulation means all discarded matter, including but not limited to human waste, trash, garbage, refuse, petroleum products, and waste material resulting from the extraction and processing operation.

(e) *Aesthetics.* To take aesthetics into account in the planning, design, and construction of facilities on the leased premises.

(f) *Wildlife.* To employ such measures as are deemed necessary by the Supervisor to protect wildlife, including fish, and their habitat.

(g) *Antiquities and historical sites.* To conduct activities on discovered, known or suspected archaeological, paleontological, or historical sites in accordance with lease terms or instructions issued by the Supervisor.

(h) *Restoration.* To provide for the restoration of all disturbed lands in a manner approved by the authorized officer, except as provided in 30 CFR Part 270, where approval will be by the Supervisor.

§ 3204.2 Waste prevention.

All leases shall be subject to the condition that the lessee will, in conducting

his exploration, development, and operations, use all reasonable precautions to prevent waste of geothermal resources and other resources found or developed in the leased lands.

§ 3204.3 Readjustment of terms and conditions.

(a) (1) Except as otherwise provided by law, the terms and conditions of any geothermal lease may be readjusted as determined by the authorized officer at not less than 10-year intervals beginning 10 years after the date geothermal steam is produced. Each lease shall provide for such readjustments.

(2) The authorized officer shall give notice to the lessee of any proposed readjustment of the terms and conditions of the lease and the nature thereof, and unless the lessee files with the authorized officer an objection to the proposed terms or relinquishes the lease within 30 days after receipt of such notice, the lessee shall be deemed conclusively to have agreed to such terms and conditions. If the lessee files objections, and agreement cannot be reached between the authorized officer and the lessee within a period of 60 days, the lease may be terminated by either party.

(b) Any readjustment of the terms and conditions of any lease of lands withdrawn or acquired in aid of a function of a Federal department or agency may be made only with the approval of that other agency.

§ 3204.4 Reservation to the United States of oil, hydrocarbon gas, and helium.

The United States reserves the ownership of and the right to extract oil, hydrocarbon gas, and helium from all geothermal resources produced from lands leased under the Act. Whenever the right to extract oil, hydrocarbon gas, and helium, from geothermal resources produced from such lands is exercised, it shall be exercised so as to cause no substantial interference with the production of geothermal resources from such lands.

§ 3204.5 Compensation for drainage; compensatory royalty.

(a) Upon a determination by the Supervisor that adjacent or cornering lands owned by the United States are being drained of geothermal resources by wells drilled on adjacent lands, the authorized officer may execute agreements with the owners of adjacent or cornering lands whereby the United States, or the United States and its lessees, shall be compensated for such drainage, such agreements to be made with the consent of any lessee affected thereby. The precise nature of any agreement will depend on the conditions and circumstances involved in the particular case.

(b) Where land in any lease is being drained of its geothermal resources by a well either on a Federal lease issued at a lower rate of royalty or on land not the property of the United States, the lessee must drill and produce all wells necessary to protect the leased lands from drain-

age. In lieu of drilling such wells, the lessee may, with the consent of the Supervisor, pay compensatory royalty in the amount determined in accordance with 30 CFR Part 270.

§ 3204.6 Patented lands.

The terms and conditions of any geothermal resource lease for lands conveyed by the United States subject to a reservation to the United States of geothermal resources may be readjusted upon notification to the surface owner.

Subpart 3205—Service Charges

§ 3205.1 Payments.

§ 3205.1-1 Form of remittance.

Remittances required under these regulations may be made by cash payment, check, certified check, bank draft, bank cashier's check, or money order. All remittances will be deposited as received.

§ 3205.1-2 Where submitted.

(a) *Rentals on nonproducing leases.* Rentals under all nonproducing leases issued shall be paid at the proper BLM office. All remittances to the Bureau of Land Management shall be made payable to the Bureau of Land Management.

(b) *Other payments.* All royalties on producing leases, communitized leases in producing well units, unitized leases in producing unit areas, leases on which compensatory royalty is payable and all payments under easements for directional drilling are to be paid to the Supervisor. All remittances to the Geological Survey shall be made payable to the U.S. Geological Survey.

§ 3205.2 Service charges.

(a) *Competitive lease applications.* No service charge is required.

(b) *Noncompetitive lease applications.* Applications for noncompetitive leases must be accompanied by a service charge of \$50 for each application.

(c) *Assignments.* Applications for approval of an assignment of a lease or interest therein must be accompanied by a service charge of \$50 for each application.

(d) *Nominations.* No service charge is required.

§ 3205.3 Rentals and royalties.

§ 3205.3-1 Payment with application.

Each application must be accompanied by payment of the first year's rental of not less than \$1 per acre or fraction thereof based on the total acreage included in the application. An application accompanied by a payment of the first year's rental which is deficient by not more than 10 percent will be approved by the authorized officer provided all other requirements are met, but, if the additional rental is not paid within 30 days from notice, the application or the lease, if issued, will be canceled.

§ 3205.3-2 Payment of annual rental.

(a) Annual rental in the amount of not less than \$1 per acre or fraction thereof must be paid in advance and must be received by the proper BLM office

on or before the anniversary date of the lease. If there is no well on the leased lands capable of producing geothermal resources in commercial quantities, the failure to pay rental on or before the anniversary date shall terminate the lease by operation of law, except as provided by § 3245.2.

(b) If, on the anniversary date of the lease, less than a full year remains in the lease term, the rentals shall be payable in the same proportion as the period remaining in the lease term is to a full year. The rentals shall be prorated on a monthly basis for the full months, and on a daily basis for the fractional month remaining in the lease term. For the purpose of prorating rentals for a fractional month, each month will be deemed to consist of 30 days.

(c) If the term of a lease for which prorated rentals have been paid is further extended to or beyond the next anniversary date of the lease, rentals for the balance of the lease year shall be due and payable on the first day of the first month following the date through which the prorated rentals were paid. If the rentals are not paid for the balance of the lease year, the lease will be subject to cancellation. However, if the anniversary date occurs before the end of the notice period, the rental for the following lease year shall nevertheless be due on the anniversary date and failure to pay the full rental for that year on or before that date shall cause the lease to terminate automatically by operation of law except as provided by § 3245.2. The lessee shall not be relieved of liability for rental due for the balance of the previous lease year.

(d) If the payment is due on a day in which the proper BLM office to receive payment is not open, payment received on the next official working day will be deemed to be timely.

§ 3205.3-3 Escalating rental rates.

To encourage the orderly and timely development of geothermal leases, all leases issued pursuant to the regulations in this Group will include an escalating rental provision as follows: (a) Beginning with the 6 year and for each year of the primary term thereafter until the lease year beginning on or after the commencement of production of geothermal resources in commercial quantities, the rental may be set by the authorized officer as the amount of rental for the preceding year plus an additional amount of not more than the annual rental for the 5th lease year; and (b) if the lease has been extended for reasons other than commencement of production of geothermal resources in commercial quantities, the rental for the 11th year and for each year thereafter until the lease year beginning on or after the commencement of such production may be set by the authorized officer as the amount of rental for the preceding year plus an additional amount of not more than the annual rental for the 10th lease year.

§ 3205.3-4 Fractional interests.

Rentals, minimum royalties, and royalties payable for lands in which the United States owns an undivided fractional interest shall be in the same proportion to the rentals, minimum royalties, and royalties provided for in § 3205.3, as the undivided fractional interest of the United States in the geothermal resources is to the full mineral interest.

§ 3205.3-5 Royalty on production.

Royalty shall be paid at the following rates on geothermal resources produced, utilized, processed, removed, or sold from leases, or reasonably susceptible of sale or utilization: (a) A royalty of not less than 10 per centum and not more than 15 per centum of the amount or value of steam, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee; (b) a royalty of not more than 5 per centum of any byproduct derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee, except that as to any byproduct which is a mineral named in section 1 of the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181), the rate of royalty for such mineral shall be the same as that provided in that Act and the maximum rate of royalty for such mineral shall not exceed the maximum royalty applicable under that Act; (c) a minimum royalty of \$2 per acre or fraction thereof in lieu of rental payable at the expiration of each lease year for each producing lease, commencing with the lease year beginning on or after the commencement of production in commercial quantities.

§ 3205.3-6 Royalty on commercially demineralized water.

All geothermal leases issued pursuant to the provisions of this group shall provide for the payment to the lessor of a royalty on commercially demineralized water at a rate to be specified in the lease of not more than 5 per centum of the value of such commercially demineralized water that has been sold or utilized by the lessee or is reasonably susceptible of sale or utilization by the lessee.

§ 3205.3-7 Waiver, suspension or reduction of rental or royalty.

(a) The authorized officer may waive, suspend, or reduce the rental or royalty for any lease or portion thereof in the interests of conservation and to encourage the greatest ultimate recovery of geothermal resources if he determines that this is necessary to promote development or that the lease cannot be successfully operated under the lease terms.

(b) An application hereunder shall be filed in triplicate with the Supervisor, and must: (1) Contain the serial number of the leases and the names of the lessee and operator; (2) show the number, location, and status of each well that has been drilled, a tabulated statement for

each month covering a period of not less than 6 months prior to the date of filing the application of the aggregate amount of production subject to royalty computed in accordance with the operating regulations, the number of wells counted as producing each month, and the average production per well per day; (3) contain a detailed statement of expenses and costs of operating the entire lease, the income from the sale of any leased products and all facts tending to show whether the wells can be successfully operated using the royalty or rental fixed in the lease; and (4) where the application is for a reduction in royalty, furnish full information as to whether royalties or payments out of production are paid to others than to the United States, the amounts so paid, and the efforts made to reduce them. The applicant must also file agreements of the holders to a permanent reduction of all other royalties from the leasehold to an aggregate not in excess of one-half the Government royalties.

§ 3205.3-8 Application for and effect of suspension of operations and production.

(a) Applications by lessees for suspensions of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease) shall be filed in triplicate with the Supervisor, who is authorized to act on applications filed pursuant to this section and to terminate suspensions which have been or may be granted. Complete information must be furnished showing the necessity of the relief sought.

(b) A suspension shall take effect as of the time specified in the order of the Supervisor. Rental and minimum royalty payments will be suspended during any period of suspension of all operations and production directed, or assented to, by the Supervisor, beginning with the first day of the lease month in which the suspension of operations and production becomes effective or, if the suspension of operations and production becomes effective on any date other than the first day of a lease month, beginning with the first day of the lease month following such effective date. The suspension of rental and royalty payments shall end on the first day of the lease month in which operations or production is resumed. Where rentals are creditable against royalties and have been paid in advance, proper credit will be allowed on the next rental or royalty due under the lease.

(c) No lease shall be deemed to expire by reason of a suspension of either operations or production only, pursuant to any order or assent of the Supervisor.

(d) If there is a well on the leased premises capable of producing geothermal resources and all operations and production are suspended pursuant to any order of the Supervisor, approval of recommencement of drilling operations will terminate the suspension as to operations but not as to production, and will terminate both the period of suspension of rental and royalty payments provided

in paragraph (b) of this section and the period of suspension for which an equivalent extension will be granted. However, as provided in paragraph (c) of this section, the lease will not be deemed to expire so long as the suspension of operations or production remains in effect.

(e) The relief authorized under this section may also be obtained for any leases included within an approved unit or cooperative plan of development and operation.

(f) See 30 CFR 270.17 for regulations concerning action of the Supervisor on applications filed pursuant to this section.

§ 3205.3-9 Readjustments.

The rentals and royalties of any geothermal lease may be readjusted at not less than 20-year intervals beginning 35 years after the date geothermal steam is produced as determined by the Supervisor. In the event of any such readjustment neither the rental nor royalty paid during the preceding period shall be increased by more than 50 per centum, and in no event shall the royalty payable exceed 22½ per centum. Each geothermal lease shall provide for such readjustment. The Supervisor will give notice of any proposed readjustment of rental and royalties. Unless the lessee relinquishes the lease within 30 days after receipt of such notice, he shall conclusively be deemed to have agreed to such terms and conditions. If the lessee files objections, and no agreement can be reached between the authorized officer and the lessee within a period of 60 days, the lease may be terminated by either party.

Subpart 3206—Lease Bonds

§ 3206.1 Types of bonds and filing.

§ 3206.1-1 Types of bonds.

(a) *Lease compliance bond.* The applicant for a noncompetitive lease or the successful bidder for a competitive lease, prior to the issuance of the lease, must furnish a corporate surety bond of not less than \$10,000 conditioned on compliance with all the terms of the lease.

(b) *Protection bond.* A lessee will be required prior to entry on the leased lands to furnish and maintain a bond of not less than \$5,000 for indemnification for all damages occasioned to persons or property as the result of lease operations.

§ 3206.1-2 Filing of bonds.

A single original copy of the bond on forms approved by the Director must be filed in the proper BLM office. Bonds may be filed with a noncompetitive lease application to expedite action thereon, or within 30 days after receipt of notice by the applicant of the bond requirement, or as required and directed by the authorized officer. For unit bond forms see 30 CFR Part 271.

§ 3206.2 Termination of period of liability.

The period of liability of any bond will not be terminated until all lease terms and conditions have been fulfilled.

§ 3206.3 Operators bond.

An operator, or, if there are more than one for different portions of the lease, each operator, shall furnish a corporate surety bond or bonds in an amount prescribed by the Supervisor.

§ 3206.4 Qualified corporate sureties.

Treasury lists. A list of companies holding certificates of authority from the Secretary of the Treasury under the Act of July 30, 1947 (6 U.S.C. 6-13), as acceptable sureties on Federal bonds is published in the FEDERAL REGISTER annually.

§ 3206.5 Nationwide bond.

In lieu of bonds required under any of the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements may furnish a bond the amount of which must be not less than for \$150,000 for full nationwide coverage for all geothermal leases.

§ 3206.6 Statewide bond.

In lieu of any of the bonds required by the preceding paragraphs, the holder of leases or of operating agreements approved by the Department or holder of operating rights by virtue of being designated operator or agent by the lessee pending departmental approval of operating agreements, may furnish a statewide bond the amount of which must be at the rate of not less than \$50,000 for each unit of coverage.

§ 3206.7 Default.**§ 3206.7-1 Payment by surety.**

Where upon a default the surety makes payment to the Government of any indebtedness due under a lease, the face amount of the surety bond and the surety's liability thereunder shall be reduced by the amount of such payment.

§ 3206.7-2 Penalty.

Thereafter, upon penalty of cancellation of all of the leases covered by that bond, the principal shall post a new nationwide bond in the amount of \$150,000 or a unit bond, as the case may be, within 6 months after notice, or within such shorter period as the authorized officer of the Bureau of Land Management may fix. However, in lieu thereof, the principal may within that time file separate bonds for each lease.

§ 3206.8 Applicability of provisions to existing bonds.

The provisions hereof may be made applicable to any nationwide or statewide bond in force at the time of the approval of the amendment of this paragraph by filing in the appropriate land office a written consent to that effect and an agreement to be bound by the provisions hereof executed by the principal and the surety. Upon receipt thereof the bond will be deemed to be subject to the provisions of this paragraph.

PART 3210—NONCOMPETITIVE LEASES**Subpart 3210—Noncompetitive Leases; General****Sec.**

- 3210.1 General.
- 3210.1-1 Withdrawal of application.
- 3210.1-2 Amendment to lease.
- 3210.1-3 Determination of priorities.
- 3210.1-4 Rejections.

Subpart 3211—Regular Offers

- 3211.1 Availability of land.
- 3211.2 Application.

Subpart 3212—Bureau Motion, Lands Previously Leased for Geothermal Resources

- 3212.1 Releasing of formerly leased lands.
- 3212.2 Leasing units receiving multiple nominations.
- 3212.3 Leasing units receiving single nominations.
- 3212.4 Nominating procedures.
- 3212.5 Rental returned.

Subpart 3210—Noncompetitive Leases; General**§ 3210.1 General.****§ 3210.1-1 Withdrawal of application.**

An application may not be withdrawn, either in whole or in part, unless the request is received by the proper BLM office before the lease has been signed on behalf of the United States even though the effective date of the lease is subsequent to the date of filing of the withdrawal, except where a separate conflicting lease has been signed on behalf of the United States covering the land described in the withdrawal.

§ 3210.1-2 Amendment to lease.

If any of the land applied for is open to filing when the application was filed but is omitted from the lease for any reason and thereafter becomes available for noncompetitive leasing, the original lease will be amended to include the omitted land unless, before the issuance of the amendment, the proper BLM office receives a withdrawal of the lessee's application with respect to such land or such omitted lands have been determined to be within a KGRA.

§ 3210.1-3 Determination of priorities.

No lease shall be issued before final action has been taken on (a) any prior application to lease the land, (b) any subsequent application to lease the land that is based upon a claimed preferential right and (c) any petition for the renewal or reinstatement of an existing or former lease on the land. If a lease is issued before final action has been taken on such applications and petitions, it shall be canceled, after due notice to the lessee, where the applicant or petitioner is found to be qualified and entitled to receive a lease of the land. Multiple applications for lease of the same lands received in the mail or delivered on the same day will be deemed to display a competitive interest and to have been simultaneously filed. If the lands are not within any KGRA, the right of priority to a noncompetitive geothermal lease, among those persons simultane-

ously filing therefor, will be determined by a public drawing.

§ 3210.1-4 Rejections.

If, after the filing of an application for a noncompetitive lease and before the issuance of a lease, or amendment thereto, pursuant to that application, the land embraced in the application becomes included within a KGRA, the application will be rejected as to such KGRA lands.

Subpart 3211—Regular Offers**§ 3211.1 Availability of land.**

Lands and deposits subject to disposition under this Subpart which are not within any KGRA will be available for leasing on the 30th day after the effective date of these regulations. All applications to lease the same lands (which are not within any KGRA) which are filed between the effective date of these regulations and 30 days following that time will be considered to have been filed simultaneously, and the respective priority of the various applications will be determined in accordance with § 3210.1-3.

§ 3211.2 Application.

No specific form is required. An application for a lease must be filed in the proper BLM office in duplicate for public lands and in triplicate for acquired lands. An application will be considered filed when it is received in the proper office during business hours. The application must include the following:

(a) The applicant's name and address.

(b) A statement of applicant's citizenship and qualifications.

(c) A complete and accurate description of the lands applied for.

(d) An exploration and development plan which shall include: (1) Map showing topography, drainage pattern, present road and trail locations, present utility systems, proposed road and trail location, proposed well locations, potential surface plant facilities and pipelines, and (2) a narrative statement setting forth his proposed exploration plan and methods. The narrative statement should also describe the measures proposed to be taken to prevent or control fire, soil erosion, pollution of surface and ground water, damage to fish and wildlife or other natural resources, air and noise pollution and hazards to public health and safety both during and after exploration or development activities.

(e) A statement of interest, direct or indirect, in other Federal geothermal leases or applications in the same State. Such total interest may not exceed 20,480 acres.

Subpart 3212—Bureau Motion—Land Previously Leased for Geothermal Resources**§ 3212.1 Releasing of formerly leased lands.**

From time to time the authorized officer will publish in the FEDERAL REGISTER, post in each State Office, and provide appropriate news coverage of: (a)

A list of leasing units composed of lands in canceled, expired, relinquished, or terminated leases which are not withdrawn from leasing or not included in a KGRA and which he has determined to be available for leasing, and (b) a request for nominations for leasing. Nominations of tracts should be addressed to the proper BLM office.

§ 3212.2 Leasing units receiving multiple nominations.

If the lands are determined not to be within any KGRA, multiple nominations for such lands within the prescribed period will be considered as simultaneous filings and each nominator will be given the opportunity to qualify for a lease in accordance with Subpart 3211. Where more than one nominator qualifies for a lease, the priority shall be determined by public drawing.

§ 3212.3 Leasing units receiving single nominations.

(a) Tracts receiving only one nomination, which have not been included within any KGRA, will be leased to the nominator, all else being regular.

(b) If no nominations are received a lease may be issued pursuant to an application filed in accordance with these regulations.

§ 3212.4 Nominating procedures.

No specific form is required. Only one complete leasing unit, identified by unit number, may be included in a nomination. Lands not on the published list may not be included in the nomination. The nomination must be accompanied by (a) the first year's advance rental, and (b) a signed statement that the nominator will furnish the information required by these regulations within 15 days after notification that his nomination is the only one for the tract.

§ 3212.5 Rental returned.

If an applicant or nominator withdraws his application or nomination or if his application or nomination to lease is rejected, the advance rental will be returned to him.

PART 3220—COMPETITIVE LEASES

Subpart 3220—Competitive Leases; General

Sec.

- 3220.1 General.
- 3220.2 Nominations.
- 3220.3 Publication of notice of lease sale.
- 3220.4 Contents of notice of lease sale.
- 3220.5 Bidding requirements.
- 3220.6 Award of lease.

Subpart 3220—Competitive Leases; General

§ 3220.1 General.

(a) Lands within a KGRA, except as provided under § 3201.1-2(b), will be available for leasing on the effective date of these regulations.

(b) The authorized officer will accept nominations to lease, or may on his own motion from time to time call for nominations to lease. Nominations may be withdrawn at any time.

§ 3220.2 Nominations.

(a) No specific form is required.

(b) A nomination must be filed in the proper BLM office in duplicate for public lands and triplicate for acquired lands and must include the following:

(1) The nominator's name and address.

(2) A statement of citizenship and qualifications for lease.

(3) A description of the lands.

(4) A statement of the interests, direct or indirect, held in other Federal geothermal leases or nominations in the same State.

§ 3220.3 Publication of notice of lease sale.

Where the Secretary determines to offer all or any of the nominated land for competitive leasing he will publish a notice of lease sale once a week for 4 consecutive weeks, or for such other period as he may direct.

§ 3220.4 Contents of notice of lease sale.

The notice will state that the successful bidder will be required, prior to the issuance of a lease, to pay his proportionate share of the total cost of publication of the notice which shall be that portion of the total advertising cost that the number of parcels of land awarded to him bears to the number of parcels for which high bidders are declared. The notice will also state the time and place of sale, the manner in which bids may be submitted, the description of the lands, and the terms and conditions of the sale, including royalty and rental rates.

§ 3220.5 Bidding requirements.

(a) A separate sealed bid must be submitted for each lease unit. Each bidder must submit with his bid a certified or cashier's check, bank draft, money order or cash in the amount of one-half of the amount bid together with proof of qualifications as required by these regulations.

(b) All bidders are warned against violation of the provisions of Title 18 U.S.C. section 1860 prohibiting unlawful combination or intimidation of bidders.

§ 3220.6 Award of lease.

All sealed bids shall be opened at the place, date, and hour specified in the notice. No bids will be accepted or rejected at that time, except as otherwise provided in these regulations. Leases will be awarded to the highest responsible qualified bidder. The right to reject any and all bids is reserved. If the authorized officer fails to accept the highest bid for a lease within 30 days after the date on which the bids are opened, all bids will be considered rejected. If the lease is awarded, three copies of the lease will be sent to the successful bidder who shall be required to execute them within 30 days from receipt thereof, to pay the first year's rental, the balance of the bonus bid, and file the required bond or bonds. Deposits on rejected bids will be returned. If the successful bidder fails to execute the lease or otherwise comply with the

applicable regulations, his deposit will be forfeited and disposed of as other receipts under the Act. When the three copies of the lease are executed by the successful bidder and returned to the authorized officer, the lease will be executed by the authorized officer and a copy will be mailed to the successful bidder.

PART 3230—RIGHTS TO CONVERSION TO GEOTHERMAL LEASES OR APPLICATION FOR GEOTHERMAL LEASES

Subpart 3230—Rights to Conversion to Geothermal Leases or Application for Geothermal Leases; General

Sec.

- 3230.1 General.
- 3230.1-1 Rights to conversion to geothermal leases.
- 3230.1-2 Rights to conversion to applications for geothermal leases.
- 3230.1-3 Land in which minerals are reserved to the United States.
- 3230.1-4 Conflicting claims of rights to conversion to geothermal leases.
- 3230.1-5 Evidence required to qualify for grant of rights to conversion to geothermal leases.
- 3230.1-6 Method of leasing to owners of conversion rights to geothermal leases.
- 3230.1-7 Acreage limitation.
- 3230.2 Qualifications.
- 3230.3 Applications.
- 3230.3-1 Filing of application.
- 3230.3-2 Statements required.
- 3230.4 Conversion to geothermal leases or to applications for geothermal leases.
- 3230.4-1 Processing and adjudicating applications.
- 3230.4-2 Approval.

Subpart 3230—Rights to Conversion to Geothermal Leases or Application for Geothermal Leases

§ 3230.1 General.

§ 3230.1-1 Rights to conversion to geothermal leases.

Where lands were on September 7, 1965, subject to valid leases or permits issued under the Mineral Leasing Act of 1920, as amended and supplemented (30 U.S.C. 181-287), or the Mineral Leasing Act for Acquired Lands, as amended (30 U.S.C. 351-358), or subject to valid existing mining claims located on or prior to September 7, 1965, the lessees, permittees, or claimants, or their successors in interest, if qualified to hold geothermal leases, shall have the right, subject to certain limitations as hereinafter provided, to convert such leases, permits or claims to geothermal leases covering the same lands.

§ 3230.1-2 Rights to conversion to applications for geothermal leases.

Where lands were subject to application for leases or permits under the mineral leasing laws referred to in § 3230.1-1 on September 7, 1965, the applicants may, subject to certain limitations as hereinafter provided, convert their applications to applications for geothermal leases having priorities dating from the time of filing such applications under said mineral leasing laws.

§ 3230.1-3 Land in which minerals are reserved to the United States.

Where a right to one of the forms of conversion referred to in §§ 3230.1-1 or 3230.1-2 is claimed as to lands the surface of which has passed from Federal ownership but in which the minerals have been reserved to the United States, final action on any claim to conversion rights under section 4 of the Act shall be held in abeyance until such time as the question of title to the geothermal resources in such lands has been resolved pursuant to the provisions of section 21(b) of the Act.

§ 3230.1-4 Conflicting claims of rights to conversion to geothermal leases.

Where there are conflicting claims of rights to conversion to geothermal leases based upon mineral leases, mineral permits, or mining claims embracing the same land, the date of issuance of the permit or lease or of recordation of the claim shall determine priority.

§ 3230.1-5 Evidence required to qualify for grant of rights to conversion to geothermal leases.

Any person claiming rights to conversion to a geothermal lease must show to the reasonable satisfaction of the authorized officer that substantial expenditures for the exploration, development or production of geothermal steam were made prior to September 7, 1965, on the lands for which a lease is sought or on adjoining, adjacent or nearby lands, including both Federal and non-Federal lands.

§ 3230.1-6 Method of leasing to owners of conversion rights to geothermal leases.

(a) *Lands included within any KGRA*—(1) *Competitive lease*. Where lands have been included with any KGRA, the owner of a conversion right to a geothermal lease for such lands shall be entitled to the issuance of a competitive lease only in accordance with the provisions of subparagraph (2) of this paragraph.

(2) *Preference right*. Lands which have been included within any KGRA shall be leased only by competitive bidding in the manner prescribed in Subpart 3220 of this chapter. Upon the competitive sale, the competitive geothermal lease shall be issued to the person owning the right to conversion to a geothermal lease for such lands if he makes payment of an amount equal to the highest bona fide bid for that lease, and makes payment of the rental for the first year, within thirty (30) days after he receives written notice from the Secretary of the amount of the highest bid.

(b) *Lands not included within any KGRA*—*Noncompetitive lease*. Where lands have not been included within any KGRA, the owner of a conversion right to a geothermal lease for such lands, if otherwise qualified, shall be entitled to the issuance of a noncompetitive lease for such lands.

§ 3230.1-7 Acreage limitation.

No person shall be permitted to convert to geothermal leases mineral leases, permits, applications therefor, or mining claims for more than 10,240 acres.

§ 3230.2 Qualifications.

Persons who believe they are qualified under the Act to convert mineral leases or permits or valid existing mining claims to geothermal leases and persons who believe they are entitled to convert applications for mineral leases and permits to applications for geothermal leases shall comply with the procedures set forth below.

§ 3230.3 Applications.

§ 3230.3-1 Filing of application.

A written application shall have been filed with the proper BLM office on or before June 22, 1971, pursuant to the notice published in the FEDERAL REGISTER of January 15, 1971, 36 F.R. 623. If such an application has been filed and does not contain the information specified in section 3230.3-2 hereof, such information must be supplied by the applicant within 60 days of the effective date of these regulations.

§ 3230.3-2 Statements required.

(a) An application based on a valid lease or permit referred to in section 3230.1-1 hereof shall include the date of issuance, the State in which the lands are located, and the serial number of the lease or permit. An application based on a mining claim referred to in § 3230.1-1 shall include the name, location, legal description or reference sufficient to identify the lands on the ground, date of location and date and place of recordation of the mining claim (including volume and page) which the applicant seeks to convert to a geothermal lease. An application based on an application for a mineral lease or permit referred to in section 3230.1-1 shall include the date the application for the lease or permit was filed with the Bureau of Land Management and the location of the proper BLM office where the application was filed, and should indicate the serial number assigned to the application.

(b) An application shall include a description of the lands sought to be included in a geothermal lease. If the lands have been surveyed under the public land rectangular system, each application shall describe the lands by legal subdivision, section, township, and range. If the lands have not been so surveyed, each application shall describe the lands by metes and bounds, giving courses and distances between the successive angle points on the boundary of the tract, and connected by courses and distances to a monument or to a prominent topographic feature. When protracted surveys have been approved and the effective date thereof published in the FEDERAL REGISTER, each application for lands shown on such protracted surveys, filed on or after such effective date, shall describe the lands according to the legal

subdivision, section, township, and range shown on the approved protracted surveys.

(c) An application shall be accompanied by a detailed statement showing: (1) The expenditures made for the exploration, development, or production of geothermal steam by the applicant on lands for which a geothermal lease is sought or on adjoining, adjacent or nearby Federal or non-Federal lands and the date or dates such expenditures were made, (2) the names and current addresses of the persons who actually performed the aforesaid exploration, development, or production work, (3) the geological, geophysical, and engineering data acquired in such exploration, development, and production which demonstrates, or tends to demonstrate the expenditures claimed, and (4) a map showing the location where the expenditures and improvements were made.

(d) The applicant shall file such additional information with respect to the application as requested by the authorized officer.

§ 3230.4 Conversion to geothermal leases or to applications for geothermal leases.

§ 3230.4-1 Processing and adjudicating applications.

Application for conversion to geothermal leases or to applications for geothermal leases together with all information and data submitted pursuant to § 3230.3-2 hereof and any other pertinent available information or data shall be reviewed by the authorized officer for the purpose of determining whether the required showing has been made, and thereafter the authorized officer shall prepare a proposed determination which shall be submitted to the Secretary.

§ 3230.4-2 Approval.

The authorized officer will make a determination that the applicant has or has not satisfactorily shown that he is entitled to receive the grant of a geothermal lease, or application for a geothermal lease.

PART 3240—RULES GOVERNING LEASES

Subpart 3240—Rules Governing Leases

Subpart 3241—Lease Extensions, Continuations, or Renewal

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Subpart 3242—Assignments and Transfers

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- 3244.1 Cooperative or unit plans.
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- 3244.4-1 Approval.
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Subpart 3245—Terminations and Expirations

- 3245.1 Relinquishments.
- 3245.2 Automatic terminations and reinstatements.
- 3245.2-1 General.
- 3245.2-2 Exceptions.

Subpart 3241—Lease Extensions, Continuation, or Renewal**§ 3241.1 Applications.**

An application for lease extension, continuation, or renewal may be filed by the record title holder of the lease, by an assignee of the record title whose assignment has been filed for approval, or by an operator whose operating agreement has been filed for approval.

§ 3241.2 Forms.

An application for extension or renewal must be filed, within ninety days before the expiration date of the lease, on a form approved by the Director or unofficial copies of that form in current use. The application must be accompanied by a service charge of \$50 which will be retained as a service charge even though the application is later withdrawn or rejected. The unofficial copies must be exact reproductions, on one sheet of both sides, of the official form.

§ 3241.3 Segregation effect of application.

The timely filing of an application for extension shall have the effect of segregating the leased lands until the final action taken on the application is noted, for public lands, on the tract book, or, for acquired lands, on the official records relating thereto, of the proper BLM office.

§ 3241.4 Rejection.

If, during the 90-day period prior to the expiration date of the lease, the record title holder, assignee of record title, or operator files an application or request for extension, which is not on the prescribed form or unofficial copies thereof, or fails to file the prescribed number of copies, he shall be notified of the defect and allowed 30 days after receipt of notice in which to correct it. If the applicant fails to correct the defect within the time prescribed, the application will be rejected.

§ 3241.5 Expiration by operation of law.

Upon failure of the lessee or other person enumerated in § 3241.1 to file an application for extension within the specified period, the lease will expire at the end of its primary term without notice to the lessee. Notation of such expiration need not be made on the official records, but the lands previously covered by that expired lease will be subject to the filing of new lease offers only as provided in these regulations.

Subpart 3242—Assignments and Transfers**§ 3242.1 Assignments, transfers, interests, qualifications.****§ 3242.1-1 Record title assignments or transfers of leases or undivided lease interests.**

(a) The record title of leases may be assigned as to all or part of the leased acreage, except that no assignment will be approved where (1) either the assigned or retained portions created by the assignment would be less than 640 acres, unless the total acreage in the lease being partially assigned is less than 1,280 acres occasioned by an irregular subdivision, as provided in section 3203.2 of this part, in which case the assigned and retained portions may be less than 640 acres by an amount which is smaller than the amount by which the area would be more than 640 acres if the irregular subdivision were added, or (2) an undivided interest of less than 10 percent would be created in the leased acreage.

(b) To obtain approval of a transfer affecting the record title of a geothermal lease, a request for such approval must be made not more than 90 days after the date of the final execution of the assignment by the parties.

§ 3242.1-2 Qualifications.

(a) No assignment will be approved (1) if the assignee or any other party in interest is not qualified to take and hold a lease; (2) if a required bond is not filed; or (3) if the statement of interest required under § 3202.4-1 is not filed.

(b) An assignment to a minor will not be approved.

(c) The assignment must be accompanied by a signed statement by the assignee either (1) that he is the sole party in interest in the assignment, or (2) setting forth the names and qualifications of the other parties holding interests in the lease. Where the assignee is not the sole party in interest, separate statements must be signed by each of the other parties and by the assignee setting forth the nature and extent of the interest of each party and the nature of the agreement between them. These separate statements must be filed in the proper BLM office not later than 15 days after the filing of assignment.

(d) Where an attorney-in-fact or agent signs, on behalf of the assignor or assignee, the instrument of transfer or the application for approval, evidence of the authority of the attorney-in-fact or agent to sign such assignment or application must be furnished to the authorized officer.

(e) In order for the heirs or devisees of the deceased holder of a lease, an operating agreement, or an overriding royalty interest in a producing lease, to be recognized by the authorized officer as the holder of that lease, agreement or interest, the appropriate showing required under the regulations in this group must be furnished to the authorized officer.

§ 3242.2 Requirements for filing of assignments or transfers.**§ 3242.2-1 Place of filing and service charge.**

A request for approval of any assignment or other instrument of transfer of a lease or interest therein must be filed in the proper BLM office and accompanied by a nonrefundable service charge of \$50. An application not accompanied by payment of such a service charge will not be accepted for filing.

§ 3242.2-2 Number of copies required.

Three copies of all instruments of assignment or transfer, and a single copy of any additional information relating to citizenship or qualifications of corporations must be filed in the proper BLM office.

§ 3242.2-3 Time of filing assignments, transfers of leases, or undivided lease interests.

(a) All instruments of transfer of a lease or of an interest therein, including assignments of working interests, operating agreements, and operating rights, must be filed in the proper BLM office for approval within 90 days from

the date of execution of such instrument and must contain all of the terms and conditions agreed upon by the parties thereto, together with evidence and statements similar to that required of an applicant under these regulations in this group.

(b) A separate instrument of assignment must be filed in the proper BLM office for each geothermal lease involving transfers of record title. When transfers to the same person, association, or corporation involve more than one geothermal lease, one request for approval and one showing as to the qualifications of the assignee will be sufficient.

§ 3242.2-4 Forms and statements.

A form approved by the Director, or unofficial copies of that form in current use, must be used for transfers and requests for approval referred to in this section. Unofficial copies used must be exact reproductions on one sheet of both sides of the officially approved one-page form, except that the copies must include: (a) The following statement above the signature of the assignee: "This form is submitted in lieu of the official form and contains all of the provisions thereof as of the date of filing of this assignment;" and (b) the name and address of the printer or other party issuing unofficial reproductions of the official form. The approved form may be used for an assignment which affects a transfer of the record title to all or part of a geothermal lease, but it is not to be used for any other type of transfer. The application for assignment shall be deemed to be approved upon execution by the authorized officer.

§ 3242.2-5 Description of lands.

Each instrument of transfer must describe the lands involved in the same manner as described in the lease.

§ 3242.3 Bonds.

Where an assignment does not create separate leases, the assignee, if the assignment so provides, may become a joint principle on the bond with the assignor. Any assignment which does not convey the assignor's record title in all of the lands in the lease must also be accompanied by consent of his surety to remain bound under the bond of record as to the lease retained by said assignor, if the bond, by its terms, does not contain such consent. If a party to the assignment has previously furnished a nationwide or statewide bond, no additional showing is necessary by such party as to the bond requirement.

§ 3242.4 Approval.

Upon approval, an assignment shall be effective as of the first day of the lease month following the date of filing of the assignment required by this Subpart in the proper BLM office.

§ 3242.5 Continuing responsibility.

(a) The assignor and his surety will continue to be responsible for the performance of any obligation under the lease until the assignment is approved.

(b) Upon approval, the assignee and his surety shall be responsible for the performance of all lease obligations notwithstanding any terms in the assignment to the contrary.

§ 3242.6 Production payments.

If payments out of production are reserved, a statement must be submitted stating the details as to the amount, method of payment, and other pertinent items.

§ 3242.7 Overriding royalty interests.

§ 3242.7-1 General.

(a) Overriding royalty interests in geothermal leases constitute accountable acreage holdings under these regulations.

(b) If an overriding royalty interest is created which is not shown in the instrument of assignment or transfer, a statement must be filed in the proper BLM office describing the interest.

(c) Any such assignment will be deemed valid if accompanied by a statement over the assignee's signature that the assignee is a citizen of the United States, an association of such citizens, or a corporation organized under the laws of the United States or of one of the States or the District of Columbia, and that his interests in geothermal leases do not exceed the acreage limitations provided in these regulations.

(d) All assignments of overriding royalty interests must be filed for record in the proper BLM office within 90 days from the date of execution. Such interests will not receive formal approval.

§ 3242.7-2 Limitation of overriding royalties.

(a) Except as herein provided, an overriding royalty on the value of the output of all geothermal resources, or any of them, at the point of shipment to market may be created by assignment or otherwise: *Provided, That*, (1) the overriding royalty is not for less than one-fourth ($\frac{1}{4}$) of 1 percent of the value of such output, and does not exceed 50 percent of the rate of royalty due to the United States as specified in the geothermal lease, or as reduced pursuant to such lease, and (2) the overriding royalty, when added to overriding royalties previously created, does not exceed the maximum rate established herein.

(b) The creation of an overriding royalty interest that does not conform to the requirements of paragraph (a) of this section shall be deemed a violation of the lease terms, unless the agreement creating overriding royalties provides (1) for a prorated reduction of all overriding royalties so that the aggregate rate of royalties does not exceed the maximum rate established in paragraph (a) of this section and (2) for the suspension of an overriding royalty during any period when the royalties due to the United States have been suspended pursuant to the terms of the geothermal lease.

§ 3242.8 Lease account status; requirements.

Unless the lease account is in good financial standing as to the area covered

by an assignment at the time the assignment and bond are filed, or is placed in good standing before the assignment is reached for action, the lease shall be subject to termination in accordance with these regulations.

§ 3242.9 Effect of assignment.

An assignment of the record title of the complete interest in a portion of the lands in a lease shall segregate the assigned and retained portions into separate and distinct leases. An assignment of an undivided interest in the entire leasehold shall not segregate the lease into separate or distinct leases.

Subpart 3243—Production and Use of Byproducts

§ 3243.1 General.

Where the Supervisor determines that production, use, or conversion of geothermal steam is susceptible of producing a valuable byproduct or byproducts, including commercially demineralized water contained in or derived from such geothermal steam for beneficial use in accordance with applicable State water laws, the authorized officer shall require substantial beneficial production or use thereof, except where he determines that:

(a) Beneficial production or use is not in the interest of conservation of natural resources;

(b) Beneficial production or use would not be economically feasible; or

(c) Beneficial production and use should not be required for other reasons satisfactory to him.

§ 3243.2 Prior rights.

The production or use of such byproducts shall be subject to the rights of the holders of preexisting leases, permits or claims covering the same lands or the same minerals.

§ 3243.3 Production and use of commercially demineralized water as a byproduct, production, and use of other sources of water.

§ 3243.3-1 General.

Except as provided in these regulations, the lessee shall have the right to process fluids, including brine, condensate, and other fluids, which are associated with geothermal steam within lands subject to the geothermal lease for the purpose of developing, producing, and utilizing the commercially demineralized water recovered as a result of such processing.

§ 3243.3-2 Prohibition on production of commercially demineralized water.

The lessee shall not be authorized to engage in the primary production of commercially demineralized water from the produced fluids contained in or derived from geothermal steam referred to in § 3243.3-1, where such use would result in the undue waste of geothermal energy.

§ 3243.3-3 Water wells on geothermal areas.

All leases issued under these regulations shall be subject to the condition that, where the lessee finds only fresh water in any well drilled for production of geothermal resources, the Secretary may, when the water is of such quality and quantity as to be valuable and usable for agricultural, domestic, or other purpose, acquire the casing in the well at the fair market value of the casing.

§ 3243.3-4 State water laws.

Nothing in these regulations shall constitute an express or implied claim or denial on the part of the Federal Government as to its exemption from State water laws.

§ 3243.4 Noncompliance with regulations or lease terms.

A lease may be canceled by the authorized officer for any violation of these regulations or the lease terms 30 days after receipt of notice of the violation by the lessee unless the violation has been corrected or is one that cannot be corrected within the notice period, and the lessee has commenced in good faith within the notice period, and thereafter proceeds diligently to correct the violation. A lessee shall be entitled to a hearing on the matter of any claimed violation or proposed cancellation of lease if a request for a hearing is made to the authorized officer within the 30-day period after notice. The period for correction of violation or commencement to correct a violation of regulations or of lease terms, as aforesaid, shall be extended to 30 days after the lessee's receipt of the authorized officer's decision upon such a hearing if the authorized officer shall find that a violation exists.

§ 3243.5 Removal of material and supplies upon termination of lease.

Upon the expiration of the lease, or the earlier termination thereof pursuant to this subpart, the lessee shall have the privilege at any time within a period of ninety (90) days thereafter of removing from the premises any materials, tools, appliances, machinery, structures, and equipment other than improvements needed for producing wells. Any materials, tools, appliances, machinery, structures, and equipment subject to removal shall at the option of the lessor become the property of the lessor on expiration of the 90-day period, or any extension thereof that may be granted because of adverse climatic conditions throughout that period, but the lessee shall remove any or all such property where so directed by the lessor.

Subpart 3244—Cooperative Conservation Provisions

§ 3244.1 Cooperative or unit plans.

For the purpose of more properly conserving the natural resources of any geothermal pool, field or like area, lessees and their representatives may unite with each other or jointly or

separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of any geothermal resource area, or any part thereof (whether or not any part of that geothermal resource area is then subject to any cooperative or unit plan of development or operation). Applications to unitize shall be filed with the Supervisor who shall certify whether such plan is necessary or advisable in the public interest. The procedure in obtaining approval of a cooperative or unit plan of development, including the suggested text of an agreement, is contained in 30 CFR Part 271.

§ 3244.2 Acreage chargeability.

All leases committed to any unit or cooperative plan approved or prescribed by the Supervisor shall be expected in determining holdings or control for purposes of acreage chargeability. For the extension of leases committed to a unit plan, see Subpart 3203 of these regulations.

§ 3244.3 Communitization or drilling agreements.

§ 3244.3-1 Approval.

(a) The Supervisor is authorized, when separate tracts under lease cannot be independently developed and operated in conformity with an established well-spacing or well-development program, to approve communitization or drilling agreements providing for the apportionment of production or royalties among the separate tracts of land comprising the drilling or spacing unit for the lease, or any portion thereof, with other lands, whether or not owned by the United States, when in the public interest. Operations or production pursuant to such an agreement shall be deemed to be operations or production as to each lease committed thereto.

(b) Preliminary requests to communitize separate tracts shall be filed in triplicate with the Supervisor.

(c) Executed agreements shall be submitted to the Supervisor in sufficient number to permit retention of five copies after approval.

§ 3244.3-2 Requirements.

The agreement shall describe the separate tracts comprising the drilling or spacing unit, disclose the apportionment of the production or royalties to the several parties and the name of the operator, and shall contain adequate provisions for the protection of the interests of all parties, including the United States. The agreement must be signed by or in behalf of all interested parties and will be effective only after approval by the Supervisor.

§ 3244.4 Operating, drilling, development contracts or a combination for joint operations.

§ 3244.4-1 Approval.

(a) The Secretary may on such conditions as he may prescribe, approve operating, drilling, or development contracts made by one or more geothermal

lessees, with one or more persons, associations, or corporation whenever, in his discretion, the conservation of natural products of the public convenience or necessity may require, or the interests of the United States may be best served thereby.

(b) The Secretary may approve a combination for joint operations, pursuant to which lessees may combine their interests in leases for the purpose of constructing and carrying on the business of producing geothermal resources, or of establishing and constructing common lines to be used by them jointly in the transmission or transportation of geothermal resources from their several wells or from the wells of other lessees, or to increase the acreage which may be acquired or held under the provisions of the Act relating to competitive leases.

(c) Contracts submitted for approval under this section should be filed with the Supervisor together with enough copies to permit retention of five copies after approval.

(d) The authority of the Secretary to approve operating, drilling, or development contracts or a combination for joint operations, without regard to acreage limitations ordinarily will be exercised only to permit operators to enter into contracts with a number of lessees sufficient to justify operations on a large scale for the discovery, development, production, or transmission, or transportation of geothermal resources, and to finance the same.

§ 3244.4-2 Requirements.

(a) The contract must be accompanied by a statement showing all the interests held by the contractor in the area or field and the proposed or agreed plan of operation or development of the field. All the contracts held by the same contractor in the area or field should be submitted for approval at the same time, and full disclosure of the project made. Complete details must be furnished in order that the Secretary may have facts upon which to make a definite determination in accordance herewith and to prescribe the conditions on which approval of the contracts shall be made.

(b) The application must show a reasonable need for the combination and that it will not result in any concentration of control over the production or sale of geothermal resources which would be inconsistent with the antimonopoly provisions of law.

§ 3244.4-3 Acreage chargeability.

All leases operated under approved operating, drilling or development contracts or a combination for joint operations and interests thereunder, shall be excepted in determining holdings or control for purposes of acreage chargeability.

Subpart 3245—Terminations and Expirations

§ 3245.1 Relinquishments.

A lease, or any legal subdivision of the area covered by such lease, may be surrendered by the record title holder by

filing a written relinquishment in triplicate in the proper BLM office. A relinquishment shall take effect on the date it is filed, subject to the continued obligation of the lessee and his surety: (a) To make payments of all accruing rentals and royalties; (b) to place all wells on the land to be relinquished in condition for suspension of operations or abandonment as prescribed by the Supervisor; (c) to restore the surface resources in accordance with all regulations and the terms of the lease; and (d) to comply with all other environmental stipulations provided for by such regulations or lease. A statement must be furnished that all moneys due and payable to workmen employed on the leased premises have been paid.

§ 3245.2 Automatic terminations and reinstatements.

§ 3245.2-1 General.

Except as provided in § 3245.2-2 any lease will automatically terminate by operation of law if the lessee fails to pay the rental on or before the anniversary date of such lease. However, if the time for payment falls upon any day in which the proper office to receive payment is not open, payment received on the next official working day shall be deemed to be timely. The termination of the lease for failure to pay the rental must be noted on the official records of the proper BLM office. Upon such notation the lands included in such lease will become subject to the filing of new lease offers as provided for in Subpart 3212 of these regulations.

§ 3245.2-2 Exceptions.

(a) *Nominal deficiency.* If the rental payment due under a lease is paid on or before its anniversary date but the amount of the payment is deficient and the deficiency is nominal, the lease shall not have automatically terminated unless the lessee fails to pay the deficiency within the period prescribed in a Notice of Deficiency, or by the due date, whichever is later. A deficiency is nominal if it is not more than \$10 or one percentum (1%) of the total payment due, whichever is more. The authorized officer shall send a Notice of Deficiency to the lessee on an approved form. The Notice shall be sent by certified mail, return receipt requested, and shall allow the lessee 15 days from the date of receipt to submit the full balance due to the proper BLM office. If the payment called for in the notice is not made within the time allowed, the lease will have terminated by operation of law as of its anniversary date.

(b) *Reinstatements.* (1) Except as hereinafter provided, the authorized officer may reinstate a lease which has terminated automatically for failure to pay the full amount of rental due on or before the anniversary date, if it is shown to his satisfaction that such failure was either justifiable or not due to a lack of reasonable diligence on the part of the lessee; and a petition for reinstatement, together with the required rental, including any back rental which has accrued

from the date of termination of the lease, is filed with the proper BLM office.

(2) The burden of showing that the failure to pay on or before the anniversary date was justifiable or not due to lack of reasonable diligence will be on the lessee. Reasonable diligence normally requires sending or delivering payments sufficiently in advance of the anniversary date to account for normal delays in the collection, transmittal, and delivery of the payment. The authorized officer may require evidence, such as post office receipts, of the time of sending or delivery of payments.

(3) Under no conditions will a lease be reinstated if (i) a valid lease has been issued prior to the filing of a petition for reinstatement affecting any of the lands covered by the terminated lease, or (ii) the interest in the lands has been withdrawn, disposed of, or has otherwise become unavailable for leasing. However, the authorized officer will not issue a new lease for lands covered by a lease which terminated automatically until 90 days after the date of termination. (4) Reinstatement of terminated leases is discretionary with the Secretary. The basic criterion in accordance with which this discretion will be exercised is whether the Secretary would be willing to issue a lease if a new lease offer for the same land were under consideration.

Dated: July 15, 1971.

W. T. PECORA,
Under Secretary of the Interior.

[FR Doc.71-10347 Filed 7-22-71;8:45 am]

Geological Survey [30 CFR Part 270]

GEOHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED, AND WITHDRAWN LANDS

Notice of Proposed Rule Making

The purpose of this proposed rule making is to implement the Geothermal Steam Act of December 24, 1970 (84 Stat. 1566). That Act provides for the leasing of public lands for geothermal resource exploration, development, and production.

Environmental statements will be prepared and disseminated in accordance with the provisions of section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. Section 4332(2)(C) (Supp. V., 1965-69)) prior to the promulgation of any leasing and operating regulations.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rule-making process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, D.C. 20240, within 60 days of the date of publication of this notice in the FEDERAL REGISTER.

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GENERAL PROVISIONS

§ 270.1 Purpose and authority.

The Geothermal Steam Act enacted on December 24, 1970, (84 Stat. 1566) referred to in this part as "the Act", authorizes the Secretary of the Interior to prescribe rules and regulations applicable to operations conducted under a lease granted pursuant to that Act, and for the development and conservation of geothermal steam and associated geothermal resources, the prevention of waste, the protection of the public interest, and the protection of water quality, and other environmental qualities. The regulations in this part shall be administered by the Director through the

Chief, Conservation Division, or his duly appointed representative.

§ 270.2 Definitions.

As used in the regulations in this part, the term:

(a) "Secretary" means the Secretary of the Interior.

(b) "Director" means the Director of the Geological Survey.

(c) "Supervisor" means either a representative of the Secretary (under administrative direction of the Director, exercised through the Chief, Conservation Division, Geological Survey) who is authorized to regulate operations and to perform other duties prescribed in the regulations in this part, or any subordinate of such representative acting under his direction.

(d) "Geothermal lease" means a lease issued under 43 CFR Group 3200.

(e) "Lessee" means the individual, corporation, or association to which a geothermal lease has been issued and its successor in interest or assignee. It also means any agent of the lessee or an operator holding authority by or through the lessee.

(f) "Operator" means the individual, corporation, or association having control or management of operations on the leased lands or a portion thereof. The operator may be the lessee, designated operator, or agent of the lessee, or holder of rights under an approved operating agreement.

(g) "Geothermal resources" means (1) all products of geothermal processes, embracing indigenous steam, hot water, and hot brines; (2) steam and other gases, hot water, and hot brines, resulting from water, gas, or other fluids artificially introduced into geothermal formations; (3) heat or other associated energy found in geothermal formations; and (4) any byproduct derived therefrom.

(h) "Byproduct" means (1) any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium), which are found in solution or developed in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves, and (2) commercially demineralized water.

(i) "Waste" means (1) physical waste as that term is generally understood; (2) waste of reservoir energy through inefficiency, improper use of or unnecessary dissipation of reservoir energy; (3) the location, spacing, drilling, equipping, operating, or producing of any geothermal well or wells in a manner which causes or tends to cause reduction in the quantity of geothermal energy ultimately recoverable from a reservoir under prudent and workmanlike operations or which tends to cause unnecessary or excessive surface or subsurface loss or destruction of geothermal energy; and (4) the inefficient

transmission of geothermal energy from the source (wellhead) to point of utilization.

(j) "Directionally drilled well" means the deviation of a well bore from the vertical or from its normal course in an intended predetermined direction or course with respect to the points of the compass. Directionally drilled well shall not include those deviated for the purpose of straightening a hole that has become crooked in the normal course of drilling or holes deviated at random without regard to compass direction in an attempt to sidetrack a portion of the hole on account of mechanical difficulty in drilling.

(k) "Geothermal Resources Operational (GRO) Orders." Formal numbered orders, issued by the Supervisor, with the prior approval of the Chief, Conservation Division, Geological Survey, which implement the regulations in this part and apply to operations in an area, region, or any major portion thereof.

(l) "Producible well" means a well which is capable of producing geothermal resources in commercial quantities.

(m) "Commercial quantities" means quantities sufficient to pay a profit after all costs of production have been met.

JURISDICTION AND FUNCTIONS OF SUPERVISOR

§ 270.10 Jurisdiction.

Drilling and production operations, handling and measurement of production, determination and collection of royalty and, in general, all operations conducted on a geothermal lease are subject to the regulations in this part and the applicable regulations contained in 43 CFR Group 3200, and are under the jurisdiction of the Supervisor for the region in which the leased land is situated, subject to the supervisory authority of the Secretary and the Director.

§ 270.11 General functions.

The Supervisor is authorized and directed to carry out the provisions of this part. He will require compliance with the terms of geothermal leases, with the regulations in this part and the applicable regulations in 43 CFR Group 3200, and with the applicable statutes. He shall act on all applications, requests, and notices required in this part. In executing his functions under this part the Supervisor shall ensure that all operations conform to the best practice and are conducted in such manner as to protect the deposits of the leased lands and to result in the maximum ultimate recovery of geothermal resources, with minimum waste, and are consistent with the principles of the use of the land for other purposes and of the protection of the environment. Inasmuch as conditions in one area may vary widely from conditions in another area, the regulations in this part are intended to be general in nature. Detailed procedures hereunder in any particular

area will be covered by GRO orders. The Supervisor may issue oral orders to govern lease operations, but such orders shall be confirmed in writing by the Supervisor as promptly as possible. The Supervisor may issue other orders and rules to govern the development and method for production of a pool, field, or area. Prior to the issuance of GRO orders and other orders and rules, the Supervisor may consult with, and receive comments from Federal and State agencies, lessees, operators, and other interested parties. Before permitting operations on the leased land, the Supervisor shall determine if the lease is in good standing, whether the lessee is authorized to conduct operations, has filed an acceptable bond, and has an approved plan of operations.

§ 270.12 Regulation of operations.

The Supervisor shall inspect and supervise operations performed under the regulations in this part to: (a) Prevent waste and damage to formations or deposits containing geothermal resources; (b) prevent unnecessary damage to other natural resources; (c) prevent degradation of the water quality; (d) protect other environmental qualities; and (e) prevent injury to life or property. The Supervisor shall issue such GRO orders as are necessary to accomplish these purposes.

§ 270.13 Required samples, tests, and surveys.

When necessary or advisable, the Supervisor shall require that adequate samples be taken and tests or surveys be made using acceptable techniques, without cost to the lessor, to determine the identity and character of formations; the presence of geothermal resources, water, or reservoir energy; the quantity and quality of geothermal resources, or water; the amount and direction of deviation of any well from the vertical; formation, casing, and tubing pressures, temperatures, rate of heat and fluid flow, and whether operations are conducted in a manner looking to the protection of the interests of the lessor.

§ 270.14 Drilling and abandonment of wells.

The Supervisor shall require that drilling be conducted in accordance with the terms of the lease, GRO orders, and the regulations in this part and 43 CFR Group 3200; and shall require plugging and abandonment of any well or wells no longer necessary for operations in accordance with plans approved or prescribed by him. Upon the failure of a lessee to comply with any requirement under this section, the Supervisor is authorized to perform the work at the expense of the lessee and the surety.

§ 270.15 Well spacing and well casing.

The Supervisor shall approve proposed well-spacing and well-casing programs or prescribe such modifications

to the programs as he determines necessary for proper development, giving consideration to such factors as: (a) Topographic characteristics of the area; (b) hydrologic, geologic and reservoir characteristics of the field; (c) the number of wells that can be economically drilled to provide the necessary volume of geothermal resources for the intended use; (d) protection of correlative rights; (e) minimizing well interference; (f) unreasonable interference with multiple use of lands; and (g) protection of the environment.

§ 270.16 Royalties and other payments.

The Supervisor shall determine the value of production accruing to the lessor as royalty, the loss through waste or failure to drill and produce protection wells on the lease, and the compensation due to the lessor as reimbursement for such loss.

§ 270.17 Suspension of operations and production.

(a) On receipt of an application filed in accordance with 43 CFR 3205.3-7 for suspension of operations or production, or both, under a producing geothermal lease (or for relief from any drilling or producing requirements of such a lease), the Supervisor may, if he deems the suspension or relief warranted, approve the application.

(b) In the interest of conservation, the Supervisor may, on his own motion, suspend operations or production, or both, on any geothermal lease.

(c) Where operations or production, or both, under a lease, have been suspended, the Supervisor may approve resumption of operations or production either on his own motion or upon written request by the lessee or his agent.

(d) Whenever it appears from facts adduced by or furnished to the Supervisor that the interest of the lessor require additional drilling or producing operations, he may, by written notice, order the beginning or resumption of such operations.

(e) Any action of the Supervisor under this Section shall be subject to the right of appeal under § 270.81.

(f) See 43 CFR Group 3200 for regulations concerning requests to waive, suspend, or reduce payments of rental or royalty, and extensions of leases on which operations or production have been suspended.

REQUIREMENTS FOR LESSEES

(INCLUDING OPERATORS)

§ 270.30 Lease terms, regulations, waste, damage, and safety.

(a) The lessee shall comply with the lease terms, lease stipulations, applicable laws and regulations and any amendments thereof, GRO orders, and other written or oral orders of the Supervisor. All oral orders (to be confirmed in writing as provided in § 270.11) are effective when issued unless otherwise specified.

(b) The lessee shall take all reasonable precautions to prevent: (1) Waste; (2) damage to any natural resource in-

cluding trees and other vegetation, fish and wildlife and their habitat; (3) injury or damage to persons, real or personal property; and (4) any environmental pollution or damage.

§ 270.31 Designation of operator or agent.

In all cases where operations are not conducted by the lessee but are to be conducted under authority of an unapproved operating agreement, assignment or other arrangement, a "designation of operator" shall be submitted to the Supervisor, in a manner and form approved by him, prior to commencement of operations. Such a designation will be accepted as authority of the operator or his local representative to act for the lessee and to sign any papers or reports required under the regulations in this part. All changes of address and any termination of the authority of the operator shall be immediately reported, in writing, to the Supervisor.

§ 270.32 Local agent.

When required by the Supervisor, the lessee shall designate a local representative empowered to receive notices and comply with orders of the Supervisor issued pursuant to the regulations in this part.

§ 270.33 Drilling and producing obligations.

(a) The lessee shall diligently drill and produce such wells as are necessary to protect the lessor from loss by reason of production on other properties, or in lieu thereof, with the consent of the Supervisor, shall pay a sum determined by the Supervisor as adequate to compensate the lessor for failure to drill and produce any such well.

(b) The lessee shall promptly drill and produce such other wells as the Supervisor may require in order that the lease be developed and produced in accordance with good operating practices. (See 43 CFR Part 3234.)

§ 270.34 Drilling and development programs.

Prior to commencing any drilling operations on the lease, including the making of locations or well sites, the lessee shall submit, for approval by the Supervisor, a plan setting forth the proposed development program for the area. Each plan for the leased area shall include:

(a) Structural information based on available geologic and geophysical data;

(b) Heat flow and hydrologic information;

(c) The proposed location of each well, including projected bottomhole locations of any directionally drilled wells; and

(d) All pertinent information or data which the Supervisor may require to support the drilling program and development program for the utilization of geothermal resources.

§ 270.35 Subsequent well operations.

After completion of all operations authorized under any previously approved

notice or plan, the lessee shall not begin to redrill, repair, deepen, plug back, shoot, or plug and abandon any well, make casing tests, alter the casing or liner, stimulate production, change the method of recovering production, or use any formation or well for brine or fluid disposal without first notifying the Supervisor and receiving written approval of his plan and intention prior to commencing the contemplated work. However, in an emergency a lessee may take action to prevent damage without receiving prior approval from the Supervisor, but in such cases the lessee shall report his action to the Supervisor as soon as possible.

§ 270.36 Well designations.

The lessee shall mark each derrick upon commencement of drilling operations and each producing or suspended well in a conspicuous place with his name or the name of the operator, the serial number of the lease, the number and location of the well. Whenever possible, the well location shall be described by section or tract, township, range, and by quarter-quarter section or lot. The lessee shall take all necessary means and precautions to preserve these markings.

§ 270.37 Well records.

(a) The lessee shall keep for each well at his field headquarters or at other locations conveniently available to the Supervisor, accurate and complete records of all well operations including production, drilling, logging, directional well surveys, casing, perforation, safety devices, redrilling, deepening, repairing, cementing, alterations to casing, plugging, and abandoning. The records shall contain a description of any unusual malfunction, condition or problem; all the formations penetrated; the content and character of mineral deposits and water in each formation; thermal gradients, temperatures, pressures, analyses of geothermal waters, the kind, weight, size, grade, and setting depth of casing; and any other pertinent information.

(b) The lessee shall, within 30 days after completion of any well, transmit to the Supervisor copies of the records of all operations in a form prescribed by the Supervisor.

(c) Upon request of the Supervisor, the lessee will furnish (1) legible, exact copies of service company reports on cementing, perforating, acidizing, analyses of cores, electrical, and temperature logs, chemical analyses of steam and waters, or other similar services; (2) other reports and records of operations in the manner and form prescribed by the Supervisor.

§ 270.38 Samples, tests, and surveys.

(a) The lessee, when required by the Supervisor, will make adequate sampling, tests and/or surveys using acceptable techniques, to determine the presence, quantity, quality, and potential of geothermal resources, mineral deposits, or water; the amount and direction of deviation of any well from the vertical;

and/or formation temperatures and pressures, casing, tubing, or other pressures and such other facts as the Supervisor may require. Such tests or surveys shall be made without cost to the lessor.

(b) The lessee shall, without cost to the lessor, take such formation samples or cores to determine the identity and character of any formation as are required and prescribed by the Supervisor.

§ 270.39 Directional survey.

The Supervisor may require an angular deviation and directional survey to be made of the finished hole of each directionally drilled well. The survey shall be made at the risk and expense of the lessee unless requested by an offset lessee, and then, at the risk and expense of the offset lessee. A copy of the survey shall be furnished the Supervisor.

§ 270.40 Well control.

The lessee or operator shall: (a) Take all necessary precautions to keep all wells under control at all times; (b) utilize trained and competent personnel; (c) utilize properly maintained equipment and materials; and (d) use operating practices which insure the safety of life and property. The selection of the types and weights of drilling fluids and provisions for controlling fluid temperatures, blowout preventers, and other surface control equipment and materials, casing and cementing programs, etc., to be used shall be based on sound engineering principles and shall take into account apparent geothermal gradients, depths and pressures of the various formations to be penetrated and other pertinent geologic and engineering data and information about the area.

§ 270.41 Pollution.

The lessee shall not pollute the land, water, or air; pollute streams, damage the surface or pollute the underground water of the leased or other land. Federal and State air and water quality standards will be followed unless more stringent requirements are stipulated by the Supervisor. Plans for disposal of well effluents must take into account effects on ground waters, streams, plants, fish and wildlife and their populations, atmosphere, or any other effects which may cause or contribute to pollution, and such plans must be approved by the Supervisor before action is taken under them.

§ 270.42 Noise abatement.

The lessee shall minimize noise when conducting air drilling operations or when the well is allowed to produce while drilling or drilling is being conducted. Welfare of the operating personnel and the public must not be affected as a consequence of the noise created by the expanding gases. The method and degree of noise abatement shall be as approved by the Supervisor.

§ 270.43 Pits or sumps.

Materials and fluids or any fluid necessary to the drilling, production, or other operations by a lessee may, upon ap-

proval by the Supervisor, be discharged or placed in pits and sumps. The lessee shall provide pits and sumps of adequate capacity and design to retain all materials. In no event shall the contents of a pit or sump be allowed to: (a) Contaminate streams, artificial canals or waterways, ground waters, lakes or rivers; (b) adversely affect environment, persons, plants, fish and wildlife and their populations; or (c) damage the aesthetic values of the property or adjacent properties. When no longer needed, pits and sumps are to be filled and covered and the premises restored to a near natural state, as prescribed by the Supervisor.

§ 270.44 Well abandonment.

The lessee shall promptly plug and abandon any well on the leased land that is not used or useful. No well shall be abandoned until its lack of capacity for further profitable production of geothermal resources has been demonstrated to the satisfaction of the Supervisor. Before abandoning a producible well, the lessee shall submit to the Supervisor a statement of reasons for abandonment and his detailed plans for carrying on the necessary work. A producible well may be abandoned only after receipt of written approval by the Supervisor. No well shall be plugged and abandoned until the manner and method of plugging has been approved or prescribed by the Supervisor. Equipment shall be removed, and premises at the well site shall be restored as near as reasonably possible to its original condition immediately after plugging operations are completed on any well except as otherwise authorized by the Supervisor. Drilling equipment shall not be removed from any suspended drilling well without taking adequate measures to close the well and protect the subsurface resources.

§ 270.45 Accidents.

The lessee shall take all reasonable precautions to prevent accidents and shall notify the Supervisor within 24 hours of all accidents on the leased land, and shall submit a full report thereon within 15 days.

§ 270.46 Workmanlike operations.

The lessee shall carry on all operations and maintain the property at all times in a safe and workmanlike manner, having due regard for the preservation and the conservation of the property and the environment and for the health and safety of employees. The lessee shall remove from the property or store, in an orderly manner, all scrap or other materials not in use.

§ 270.47 Departure from orders.

The Supervisor may prescribe or approve either in writing or orally with prompt written confirmation, waivers or deviations from the requirements of GRO orders and other orders issued pursuant to these regulations, when such departures are necessary for the proper control of a well, conservation of natural resources, protection of human health and safety, property, or the environment.

§ 270.48 Sales contracts.

The lessee shall file with the Supervisor within 30 days after the effective date thereof copies of all contracts for the disposal of geothermal resources from the lease.

§ 270.49 Royalty payments.

The lessee shall pay all royalties as due under the terms of the lease. Payments of royalties are due not later than the last day of the month following the month in which sales were made, and shall be by check, bank draft, or money order, drawn to the order of the United States Geological Survey. Taxes are not deductible in computing royalties.

MEASUREMENT OF PRODUCTION AND COMPUTATION OF ROYALTIES

§ 270.60 Measurement of geothermal resources.

The lessee shall measure or gauge all production in accordance with methods approved by the Supervisor or may arrange with the Supervisor for other acceptable methods of measuring and recording production. The quantity and quality of all production shall be determined in accordance with the standard practices, procedures, and specifications generally used in industry.

§ 270.61 Determination of content of byproducts.

The lessee shall periodically furnish the Supervisor the results of periodic tests showing the content of the byproducts. Such tests shall be taken as specified by the Supervisor and the method of testing approved by him.

§ 270.62 Value of geothermal production for computing royalties.

The value of geothermal production for the purpose of computing royalty shall be the reasonable value of the product, as determined by the Supervisor. In determining the reasonable value of the product, the Supervisor shall consider: (1) The highest price paid for a majority of the production of like quality in the same field or area; (2) the total consideration received by the lessee for any disposition of the geothermal production; (3) the value of alternate available energy sources; and (4) other relevant matters.

(b) Under no circumstances shall the value of any geothermal production for the purposes of computing royalties be less than:

(1) The total consideration accruing to the lessee from the sale thereof in cases where geothermal resources are sold by the lessee to another party; or

(2) That amount which is the product of the percentage of the value of the end product attributable to the geothermal resource times the total value of such end products in cases where geothermal resources are not sold by the lessee before being utilized, but are instead directly used in manufacturing, power production, or other industrial activity.

§ 270.63 Computation of royalties.

(a) The value of geothermal production, as determined pursuant to § 270.62, shall be apportioned between geothermal steam, heat, and other forms of energy and the byproducts.

(b) The royalties payable shall be the sum of (1) the amount resulting from the multiplication of the value attributable to the geothermal steam, heat, and other forms of energy by the royalty rate set for such forms of geothermal energy in the lease and (2) the amount resulting from the multiplication of the value attributable to byproducts by the royalty rate for byproducts set in the lease.

§ 270.64 Commingling production.

The Supervisor may authorize the lessee to commingle the production from different wells and/or leases with the production of other operators subject to such conditions as he may prescribe.

PROCEDURE IN CASE OF VIOLATION OF THE REGULATIONS OR LEASE TERMS**§ 270.80 Default, termination of lease.**

Whenever an owner of a lease fails to comply with the provisions of the regulations or lease terms, the Supervisor shall give a 30-day notice to remedy any defaults or violations. Failure to perform or commence the necessary remedial action within the prescribed time period may result in termination of the lease. Lessee is entitled to request a hearing concerning any claimed default or violation pursuant to section 12 of the Act.

§ 270.81 Appeals.

(a) An appeal from any order issued under authority of the regulations in this part may be filed as set forth in this section. Compliance with any such order shall not be suspended by reason of an appeal having been taken unless such suspension is authorized in writing by the Director or the Secretary (dependent upon the officer with whom the appeal is pending) and then only upon a determination that such suspension will not be detrimental to the lessor or upon the submission and acceptance of a bond deemed adequate to indemnify the lessor from loss or damage.

(b) An appeal to the Director may be taken from any order of the Supervisor by filing the appeal with the Supervisor within 20 days after service of the order. The appeal shall incorporate or be accompanied by such written showing and argument on the facts and law as the appellant may deem adequate to justify reversal or modification of the order. All statements of fact must be made under oath.

(c) The Supervisor shall transmit the appeal and accompanying papers to the Director with a full report and recommendations. The Director shall review the record and render a decision.

(d) An appeal from the Director's decision may be taken by filing the appeal with the Director within 30 days after service of the Director's decision. The appeal shall be accompanied by such

written showing and argument on the facts and law as appellant may deem adequate to justify reversal or modification of the decision. Any statement of fact not previously submitted to the Director must be made under oath.

(e) Oral argument in any case pending before the Director or the Secretary will be allowed only in the discretion of that officer at a time to be fixed by him.

REPORTS TO BE MADE BY ALL LESSEES (INCLUDING OPERATORS)**§ 270.90 General requirements.**

Information required to be submitted in accordance with the regulations in this part shall be furnished as directed by the Supervisor. Copies of forms can be obtained from the Supervisor and must be filed with that official within the time limit prescribed.

§ 270.91 Application for permit to drill, redrill, deepen, or plug-back.

(a) A permit to drill, redrill, deepen, or plug-back a well on Federal lands must be obtained from the Supervisor before the work is begun. The application for the permit shall state the location of the well in feet, and direction from the nearest section or tract lines as shown on the official plat of survey or protracted surveys; the altitude of the ground and derrick floor above sea level and how it was determined.

(b) The proposed drilling and casing plan shall be outlined in detail under the heading "Details of Work" in the applications referred to herein, and shall describe the type of tools and equipment to be used, the proposed depth to which the well will be drilled, the estimated depths to the top of important markers, the estimated depths at which water, geothermal resources, or other mineral resources are expected, the proposed casing program (including the size and weight of casing), the depth at which each string is to be set, and the amount of cement and mud to be used, the drilling method and type of circulating media (water, mud, foam, air or combinations thereof), the type of blowout prevention equipment to be used, the proposed coring, logging, or other program (such as drilling time log and sample description) to be used to determine the formations penetrated and the proposed program for determining geothermal gradients and the sampling and analysis of geothermal resources.

(c) Each application shall be accompanied by a plat showing the surface and bottomhole locations and the distances from the nearest section or tract lines as shown on the official plat of survey or protracted surveys. The scale shall not be less than 2,000 feet to 1 inch.

§ 270.92 Sundry notices and reports on wells.

(a) Any written notice of intention to do work or to change plans previously approved must be filed in triplicate, unless otherwise directed, and must be approved by him before the work is

begun. If, in case of emergency, any notice is given orally or by wire, and approval is obtained, the transaction shall be confirmed in writing. A subsequent report of the work performed must also be filed with the Supervisor.

(b) Casing test: Notice shall be given in advance to the Supervisor or his representative of the date and time when the operator expects to make a casing test. Later, by agreement, the exact time shall be fixed. In the event of casing failure during the test, the casing must be repaired or replaced or recemented as required by the Supervisor or his representative. The results of the test must be reported within 30 days after making a casing test. The report must describe the test completely and state the amount of mud and cement used, the lapse of time between running and cementing the casing and making the test, and the method of testing.

(c) Repairs or conditioning of well: Before the repairing or conditioning of a well, a notice setting forth in detail the plan of work must be filed with, and approved by, the Supervisor. A detailed report of the work accomplished and the methods employed, including all dates, and the results of such work must be filed within 30 days after completion of the repair work.

(d) Well stimulation: Before the lessee commences stimulation of a well by any means, a notice, setting forth in detail the plan of work, must be filed with and approved by the Supervisor. The notice shall name the type of stimulant and the amount to be used. A report showing the amount of stimulant used and the production rate before and after stimulation must be filed within 30 days from completion of the work.

(e) Altering casing in a well: Notice of intention to run a liner or to alter the casing by pulling or perforating by any means must be filed with and approved by the Supervisor before the work is started. This notice shall set forth in detail the plan of work. A report must be filed within 30 days after completion of the work stating exactly what was done and the results obtained.

(f) Notice of intention to abandon well: Before abandonment work is begun on any well, whether a drilling well, geothermal resources well, water well, or so-called dry hole, notice of intention to abandon shall be filed with, and approved by, the Supervisor. The notice must be accompanied by a complete log, in duplicate, of the well to date, provided the complete log has not been filed previously, and must give a detailed statement of the proposed work, including such information as kind, location, and length of plugs (by depths), plans for mudding, cementing, shooting, testing, and removing casing, and any other pertinent information.

(g) Subsequent report of abandonment: After a well is abandoned or plugged, a subsequent record of work done must be filed with the Supervisor. This report shall be filed separately within 30 days after the work is done.

The report shall give a detailed account of the manner in which the abandonment or plugging work was carried out, including the nature and quantities of materials used in plugging and the location and extent (by depths) of the plugs of different materials; records of any tests or measurements made, and of the amount, size, and location (by depths) of casing left in the well; and a detailed statement of the volume of mud fluid used, and the pressure attained in mud-ding. If an attempt was made to part any casing, a complete report of the methods used and results obtained must be included.

§ 270.93 Log and history of well.

The lessee shall furnish in duplicate to the Supervisor, not later than 30 days after the completion of each well, a complete and accurate log and history, in chronological order, of all operations conducted on the well. A log shall be compiled for geologic information from cores or formations samples and duplicate copies of such log shall be filed. Duplicate copies of all electric logs, temperature surveys, water and steam analyses, hydrologic or heat flow tests, or direction surveys, if run, shall be furnished.

§ 270.94 Monthly report of operations.

A report of operations for each lease must be made for each calendar month, beginning with the month in which drilling operations are initiated. The report must be filed in duplicate with the Supervisor on or before the last day of the month following the month for which the report is filed unless an extension of time for the filing of the report is granted by the Supervisor. The report shall disclose accurately all operations conducted on each well during the month, the

status of operations on the last day of the month, and a general summary of the status of operations on the leased lands. The report must be submitted each month until the lease is terminated or until omission of the report is authorized by the Supervisor. The report shall show for each calendar month:

(a) The lease serial number or the unit or communitization agreement number which shall be inserted in the upper right corner;

(b) Each well listed separately by number, and its location by 40-acre subdivision (quarter-quarter section or lot), section number, township, range, and meridian;

(c) The number of days each well was produced, whether steam or hot water or both were produced, and the number of days each input well was in operation, if any;

(d) The quantity of production and any byproducts obtained from each well, if any are recovered;

(e) The depth of each active or suspended well, and the name, character, and depth of each formation drilled during the month, the date and reason for every shutdown, the names and depths of important formation changes, the amount and size of any casing run since the last report, the dates and results of any tests conducted, and any other noteworthy information on operations not specifically provided for in the form.

(f) The footnote must be completely filled out as required by the Supervisor. If no sales were made during the calendar month, the report must so state.

§ 270.95 Monthly report of sales and royalty.

A report of sales and royalty for each productive lease must be filed each

month once sales of production are made even though sales may be intermittent, unless otherwise authorized by the Supervisor. Total volumes of geothermal resources produced and sold, the value of production, and the royalty due the lessor must be shown. If byproducts are being recovered, the same requirement shall be applicable. This report is due on or before the last day of the month following the month in which production was obtained and sold or utilized, together with the royalties due the United States. Payment or royalty is to be made pursuant to § 270.49 unless otherwise authorized by the Supervisor.

§ 270.96 Forms or reports.

When forms or reports other than those referred to in the regulations in this part may be necessary, instructions for the filing of such forms or reports will be given by the Supervisor.

§ 270.97 Public inspection of records.

Geologic and geophysical interpretations, maps, and data required to be submitted under this part shall not be available for public inspection without the consent of the lessee so long as the lease remains in effect or until such time as the Supervisor determines that release of such information is required and necessary for the proper development of the field or area.

Dated: July 15, 1971.

W. T. PECORA,
Under Secretary of the Interior.

[FR Doc.71-10321 Filed 7-22-71; 8:45 am]

WEDNESDAY, MAY 3, 1972

WASHINGTON, D.C.

Volume 37 ■ Number 86

PART III



DEPARTMENT OF THE INTERIOR

Geological Survey



Geothermal Resources
Operations on Public,
Acquired, and Withdrawn
Lands

Notice of Proposed Rule Making

DEPARTMENT OF THE INTERIOR

Geological Survey

[30 CFR Part 271]

GEOHERMAL RESOURCES OPERATIONS ON PUBLIC, ACQUIRED, AND WITHDRAWN LANDS

Notice of Proposed Rule Making

The purpose of this proposed rule making on geothermal resources unit plans is to implement the Geothermal Steam Act of December 24, 1970 (84 Stat. 1566). That Act provides for the leasing of public lands for geothermal resource exploration, development, and production.

This additional proposed rule making would supplement the geothermal operating regulations (30 CFR Part 270) published as proposed rule making in the *FEDERAL REGISTER* July 23, 1971.

It is the policy of the Department of the Interior, whenever practicable, to afford the public an opportunity to participate in the rule making process. Accordingly, interested parties may submit written comments, suggestions, or objections with respect to the proposed regulations to the Geothermal Coordinator, Department of the Interior, Washington, D.C. 20240, within 45 days of the date of publication of this notice in the *FEDERAL REGISTER*.

JOHN B. RIGG,
Deputy Assistant Secretary
of the Interior.

APRIL 28, 1972.

PART 271—GEOHERMAL RESOURCES UNIT PLAN REGULATIONS (INCLUDING SUGGESTED FORMS)

GENERAL PROVISIONS

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AUTHORITY: The provisions of this Part 271 issued under section 18 of the Geothermal Steam Act of 1970 (84 Stat. 1566) (see 43 CFR Subpart 3244).

§ 271.1 Introduction.

The regulations in this part prescribe the procedure to be followed and the re-

quirements to be met by holders of Federal geothermal leases (see § 271.2d) and their representatives who wish to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan for the development of any geothermal resources pool, field, or like area, or any part thereof. Such agreements may be initiated by lessees, or where in the interest of conserving natural resources they are deemed necessary they may be required by the Director.

§ 271.2 Definitions.

The following terms, as used in this part or in any agreement approved under the regulations in this part, shall have the meanings here indicated unless otherwise defined in such agreement:

(a) *Unit agreement.* An agreement or plan of development and operation for the production and utilization of separately owned interests in the geothermal resources made subject thereto as a single consolidated unit without regard to separate ownerships and which provides for the allocation of costs and benefits on a basis defined in the agreement or plan.

(b) *Cooperative agreement.* An agreement or plan of development and operations for the production and utilization of geothermal resources made subject thereto in which separate ownership units are independently operated without allocation of production.

(c) *Agreement.* For convenience, the term "agreement" as used in the regulations in this part refers to either a unit or a cooperative agreement as defined in paragraphs (a) and (b) of this section unless otherwise indicated.

(d) *Geothermal lease.* A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Part 3200.

(e) *Unit area.* The area described in a unit agreement as constituting the land logically subject to development under such agreement.

(f) *Unitized land.* The part of a unit area committed to a unit agreement.

(g) *Unitized substances.* Deposits of geothermal resources recovered from unitized land by operation under and pursuant to a unit agreement.

(h) *Unit operator.* The person, association, partnership, corporation, or other business entity designated under a unit agreement to conduct operations on unitized land as specified in such agreement.

(i) *Participating area.* That part of a unit area to which production would be allocated in the manner described in the unit agreement, if all lands in the unit area were committed to the unit agreement.

(j) *Working interest.* The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in a unit or cooperative agreement, the owner of such interest is vested with the right to explore for, develop,

produce, and utilize such resources. The right delegated to the unit operator as such by the unit agreement is not to be regarded as a working interest.

(k) *Secretary.* The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(l) *Director.* The Director of the U.S. Geological Survey.

(m) *Supervisor.* The authorized representative of the Secretary of Interior under the administrative direction of the Director, Geological Survey, exercised through the Chief, Conservation Division, Geological Survey.

§ 271.3 Designation of area.

An application for designation of an area as logically subject to development and/or operation under a unit or cooperative agreement may be filed, in triplicate, by any proponent of such an agreement through the Supervisor. Each copy of the application shall be accompanied by a map or diagram on a scale of not less than 1 inch to 1 mile, outlining the area sought to be designated under this section. The Federal, State, and privately owned land should be indicated on said map by distinctive symbols or colors and Federal geothermal leases and lease applications should be identified by serial number. Geological information, including the results of geophysical surveys, and such other information as may tend to show that unitization is necessary and advisable in the public interest should be furnished in triplicate. Geological and geophysical information and data so furnished will not be available for public inspection, as provided by 5 U.S.C. section 552(b), without the consent of the proponent. The application and supporting data will be considered by the Director and the applicant will be informed of the decision reached. The designation of an area, pursuant to an application filed under this section, shall not create an exclusive right to submit an executed agreement for such area, nor preclude the inclusion of such area or any part thereof in another unit area.

§ 271.4 Preliminary consideration of agreements.

The form of unit agreement set forth in § 271.12 is acceptable for use in unproved areas. The use of this form is not mandatory, but any proposed departure therefrom should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. In areas proposed for unitization in which a discovery of geothermal resources has been made, or where a cooperative agreement is contemplated, the proposed agreement should be submitted with the application submitted under § 271.3 for preliminary consideration and for such revision as may be deemed necessary. The proposed form of agreement should be submitted in triplicate and should be plainly marked to identify the proposed variances from the form of agreement set forth in § 271.12.

§ 271.5 State land.

Where State-owned land is to be unitized, approval of the agreement by appropriate State officials should be obtained prior to its submission to the Department for approval of the executed agreement. When authorized by the laws of the State in which the unitized land is situated, provisions may be made in the agreement accepting statement to the extent that they are applicable to non-Federal unitized land.

§ 271.6 Qualifications of unit operator.

A unit operator must qualify as to citizenship in the same manner as those holding interests in geothermal leases issued under the Geothermal Steam Act of 1970. The unit operator may be an owner of a working interest in the unit area or such other party as may be selected by the owners of working interests and approved by the Supervisor. The unit operator shall execute an acceptance of the duties and obligations imposed by the agreement. No designation of, or change in, a unit operator will become effective unless and until approved by the Supervisor, and no such approval will be granted unless the unit operator is deemed qualified to fulfill the duties and obligations prescribed in the agreement.

§ 271.7 Parties to unit or cooperative agreement.

The owners of any rights, title, or interest in the geothermal resources deposits to be developed and operated under an agreement can be regarded as proper parties to a proposed agreement. All such owners must be invited to join as parties to the agreement. If any owner fails or refuses to join the agreement, the proponent of the agreement should declare this to the Supervisor and should submit evidence of efforts made to obtain joinder of such owner and the reasons for nonjoinder.

§ 271.8 Approval of an executed unit or cooperative agreement.

(a) A duly executed unit or cooperative agreement will be approved by the Secretary, or his duly authorized representative, upon a determination that such agreement is necessary or advisable in the public interest and is for the purpose of properly conserving the natural resources. Such approval will be incorporated in a certificate appended to the agreement. No such agreement will be approved unless at least one of the parties is a holder of a Federal lease embracing lands being committed to the agreement and unless the parties signatory to the agreement hold sufficient interests in the area to give effective control of operations therein.

(b) Where a duly executed agreement is submitted for Departmental approval, a minimum of six signed counterparts should be filed. The same number of counterparts should be filed for documents supplementing, modifying, or amending an agreement, including change of operator, designation of new operator, and notice of surrender, relinquishment, or termination.

(c) The address of each signatory party to the agreement should be inserted below the party's signature. Each signature should be attested by at least one witness, if not notarized. Corporate or other signatures made in a representative capacity must be accompanied by evidence of the authority of the signatories to act unless such evidence is already a matter of record in the United States Geological Survey. (The parties may execute any number of counterparts of the agreement with the same force and effect as if all parties signed the same document, or may execute a ratification or consent in a separate instrument with like force and effect.)

(d) Any modification of an approved agreement will require approval of the Secretary or his duly authorized representative under procedures similar to those cited in paragraph (a) of this section.

§ 271.9 Filing of papers and number of counterparts.

(a) All proposals and supporting papers, instruments, and documents submitted under this part should be filed with the Supervisor, unless otherwise provided in this part or otherwise instructed by the Director.

(b) Plans of development and operation, plans of further development and operation, and proposed participating areas and revisions thereof should be submitted in quadruplicate.

(c) Each application for approval of a participating area, or revision thereof, should be accompanied by three copies of a substantiating geologic and engineering report, structure contour map or maps, cross-section or other pertinent data.

(d) Other instruments or documents submitted for approval should be submitted for approval in sufficient number to permit the approving official to return at least one approved counterpart.

§ 271.10 Bonds.

In lieu of separate bonds required for each Federal lease committed to a unit agreement, the unit operator shall furnish and maintain a collective corporate surety bond or a personal bond conditioned upon faithful performance of the duties and obligations of the agreement and the terms of the leases subject thereto. Personal bonds shall be accompanied by a deposit of negotiable Federal securities in a sum equal at their par value to the amount of the bond and by a proper conveyance to the Secretary of full authority to sell such securities in case of default in the performance of the obligations assumed. The liability under the bond shall be for such amount as the Supervisor shall determine to be adequate to protect the interests of the United States and additional bond may be required whenever deemed necessary by the Supervisor. The bond may be filed with the manager of the district land office or the Supervisor, however, evidence must be furnished the Supervisor that such bond has been accepted by the Bureau of Land Management before operations will be authorized. A form

of corporate surety bond is set forth in § 271.15. In case of changes of unit operator, a new bond must be filed or a consent of surety to the change in principal under the existing bond must be furnished.

§ 271.11 Appeals.

Appeals may be taken in the manner provided in § 270.81 of this chapter from any decision, order or ruling issued under the regulation in this part, unless such decision, order or ruling was approved by the Secretary prior to the filing of the appeal.

§ 271.12 Form of unit agreement for unproved areas.

UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATIONS OF THE -----
UNIT AREA, COUNTY OF -----
STATE OF ----- No. -----
UNIT AGREEMENT FOR THE DEVELOPMENT AND OPERATION OF THE ----- UNIT AREA
COUNTY OF -----
STATE OF -----

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----- UNIT AGREEMENT
----- COUNTY -----

This Agreement entered into as of the ----- day of -----, 19--, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto".

WITNESSETH: Whereas the parties hereto are the owners of working, royalty, or other geothermal resources interests in land subject to this Agreement; and

Whereas the Geothermal Steam Act of 1970 (84 Stat. 1566), hereinafter referred to as the "Act", authorizes Federal leases and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or

operation of any geothermal resources pool, field, or like area, or any part thereof, for the purpose of more properly conserving the natural resources thereof, whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

Whereas the parties hereto hold sufficient interest in the ----- Unit Area covering the land herein described to effectively control operations therein; and

Whereas, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operations of the area subject to this Agreement under the terms, conditions, and limitations herein set forth;

Now, therefore, in consideration of the premises and the promises herein contained, the parties hereto commit to this agreement their respective interests in the below-defined Unit Area, and agree severally among themselves as follows:

ARTICLE I—ENABLING ACT AND REGULATIONS

1.1 The Act and all valid pertinent regulations, including operating and unit plan regulations, heretofore or hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands.

1.2 As to non-Federal lands, the geothermal resources operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this agreement.

ARTICLE II—DEFINITIONS

2.1 The following terms shall have the meanings here indicated:

(a) *Geothermal lease*. A lease issued under the act of December 24, 1970 (84 Stat. 1566), pursuant to the leasing regulations contained in 43 CFR Group 3200.

(b) *Unit area*. The area described in Article III of this Agreement.

(c) *Unit Operator*. The person, association, partnership, corporation, or other business entity designated under this Agreement to conduct operations on Unitized Land as specified herein.

(d) *Participating area*. That part of the Unit Area to which production would be allocated in the manner described in this Agreement, if all lands in the Unit Area were committed hereto.

(e) *Working interest*. The interest held in geothermal resources or in lands containing the same by virtue of a lease, operating agreement, fee title, or otherwise, under which, except as otherwise provided in this Agreement, the owner of such interest is vested with the right to explore for, develop, produce and utilize such resources. The right delegated to the Unit Operator as such by this Agreement is not to be regarded as a Working Interest.

(f) *Secretary*. The Secretary of the Interior or any person duly authorized to exercise powers vested in that officer.

(g) *Director*. The Director of the U.S. Geological Survey.

(h) *Supervisor*. The authorized representative of the Secretary of Interior under the administrative direction of the Director, Geological Survey, exercised through the Chief, Conservation Division, Geological Survey.

ARTICLE III—UNIT AREA AND EXHIBITS

3.1 The area specified on the map attached hereto marked "Exhibit A" is hereby designated and recognized as constituting the Unit Area, containing ----- acres, more or less.

The above-described Unit Area shall when practicable be expanded to include therein any additional lands or shall be contracted to exclude lands whenever such expansion or contraction is deemed to be necessary or advisable to conform with the purposes of this Agreement.

3.2 Exhibit A attached hereto and made a part hereof is a map showing the boundary of the Unit Area, the boundaries and identity of tracts and leases in said area to the extent known to the Unit Operator.

3.3 Exhibit B attached hereto and made a part hereof is a schedule showing to the extent known to the Unit Operator the acreage, percentage, and kind of ownership of geothermal resources interests in all lands in the Unit Area.

3.4 Exhibits A and B shall be revised by the Unit Operator whenever changes in the Unit Area render such revision necessary, or when requested by the Supervisor, and not less than five copies of the revised Exhibits shall be filed with the Supervisor.

ARTICLE IV—CONTRACTION AND EXPANSION OF UNIT AREA

4.1 Unless otherwise specified herein, the expansion and/or contraction of the Unit Area contemplated in Article 3.1 hereof shall be effected in the following manner:

(a) Unit Operator, on its own motion or on demand of the Director shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the Unit Area, the reasons therefore, and the proposed effective date thereof, preferably the first day of a month subsequent to the date of notice.

(b) Said notice shall be delivered to the Supervisor, and copies thereof mailed to the last known address of each Working Interest Owner, Lessee, and Lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator, together with an application in sufficient number, for approval of such expansion or contraction and with appropriate joinders.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the Supervisor, become effective as of the date prescribed in the notice thereof.

4.2 Unitized Leases, insofar as they cover any lands which are excluded from the Unit Area under any of the provisions of this Article IV may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions contained in the Act, and the lease or leases and amendments thereto, except that operations and/or production under this Unit Agreement shall not serve to maintain or continue the excluded portion of any lease.

4.3 All quarter-quarter ($\frac{1}{4}-\frac{1}{4}$) sections of land, no part of which is entitled to be within a Participating Area on the fifth anniversary of the effective date of the initial Participating Area established under this Agreement, shall be eliminated automatically from this Agreement effective as of said fifth anniversary and such lands shall no longer be a part of the Unit Area and shall no longer be subject to this Agreement unless diligent drilling operations are in progress on an exploratory well on said fifth anniversary, in which event such lands shall not be eliminated from the Unit Area for as long as exploratory drilling operations are continued diligently with not more than four (4)

months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.

4.4 An exploratory well, for the purposes of this Article IV is defined as any well, regardless of surface location, projected for completion in a zone or deposit below any zone or deposit for which a Participating Area has been established and is in effect, or any well, regardless of surface location, projected for completion at a subsurface location under Unitized Lands not entitled to be within a Participating Area.

4.5 In the event an exploratory well is completed during the four (4) months immediately preceding the fifth anniversary of the initial Participating Area established under this Agreement, lands not entitled to be within a Participating Area shall not be eliminated from this Agreement on said fifth anniversary, provided the drilling of another exploratory well is commenced under an approved Plan of Operation within four (4) months after the completion of said well. In such event, the land not entitled to be in participation shall not be eliminated from the Unit Area so long as exploratory drilling operations are continued diligently with not more than four (4) months time elapsing between the completion of one exploratory well and the commencement of the next exploratory well.

4.6 With prior approval of the Supervisor, when warranted, a period of time in excess of four (4) months may be allowed to elapse between the completion of one well and the commencement of the next well without the automatic elimination of nonparticipating acreage.

4.7 Unitized lands proved productive by drilling operations which serve to delay automatic elimination of lands under this Article IV shall be incorporated into a Participating Area (or Areas) in the same manner as such lands would have been incorporated in such areas had such lands been proven productive during the year preceding said fifth anniversary.

4.8 In the event nonparticipating lands are retained under this Agreement after the fifth anniversary of the initial Participating Area as a result of exploratory drilling operations, all quarter-quarter ($\frac{1}{4}-\frac{1}{4}$) blocks of land no part of which is entitled to be within a Participating Area shall be eliminated automatically as of the 121 day, or such later date as may be established by the Supervisor, following the completion of the last well recognized as delaying such automatic elimination beyond the fifth anniversary of the initial Participating Area established under this Agreement.

ARTICLE V—UNITIZED LAND AND UNITIZED SUBSTANCES

5.1 All land committed to this Agreement shall constitute land referred to herein as "Unitized Land". All geothermal resources in and produced from any and all formations of the Unitized Land are unitized under the terms of this agreement and herein are called "Unitized Substances."

ARTICLE VI—UNIT OPERATOR

6.1 ----- is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, production, distribution and utilization of Unitized Substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in Unitized Substances, and the term "Working Interest Owner" when used herein shall include or refer to Unit Operator as the owner of a Working Interest when such an interest is owned by it.

ARTICLE VII—RESIGNATION OR REMOVAL OF UNIT OPERATOR

7.1 Prior to the establishment of a Participating Area, hereunder, Unit Operator shall have the right to resign. Such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator or terminate Unit Operators rights, as such, for a period of six (6) months after notice of its intention to resign has been served by Unit Operator on all Working Interest Owners and the Supervisor, nor until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor, unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

7.2 After the establishment of a Participating Area hereunder Unit Operator shall have the right to resign in the manner and subject to the limitations provided in 7.1 above.

7.3 The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of Working Interests as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Supervisor.

7.4 The resignation or removal of Unit Operator under this Agreement shall not terminate its right, title, or interest as the owner of a Working Interest or other interest in Unitized Substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all wells, equipment, material, and appurtenances used in conducting the unit operations to the new duly qualified successor Unit Operator or, if no such new unit operator is elected, to the common agent appointed to represent the Working Interest Owners in any action taken hereunder to be used for the purpose of conducting operations hereunder.

7.5 In all instances of resignation or removal, until a successor Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for performance of the duties and obligations of Unit Operator, and shall not later than 30 days before such resignation or removal becomes effective appoint a common agent to represent them in any action to be taken hereunder.

7.6 The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

ARTICLE VIII—SUCCESSOR UNIT OPERATOR

8.1 If, prior to the establishment of a Participating Area hereunder, the Unit Operator shall resign as Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote or the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on an acreage basis, in the Unitized Land.

8.2 If, after the establishment of a Participating Area hereunder, the Unit Operator shall resign as Unit Operator, or shall be removed as provided in Article VII, a successor Unit Operator may be selected by vote of the owners of a majority of the Working Interests in Unitized Substances, based on their respective shares, on a participating acreage basis. Provided, that, if a majority but less than 60 percent of the Working Interest in the Participating Lands is owned by the party to this agreement, a concurring vote of one or more additional Working Interest Owners owning 10 percent or more of the

Working Interest in the participating land shall be required to select a new Unit Operator.

8.3 The selection of a successor Unit Operator shall not become effective until

(a) The Unit Operator so selected shall accept in writing the duties, obligations and responsibilities of the Unit Operator, and

(b) The selection shall have been approved by the Supervisor.

8.4 If no successor Unit Operator is selected and qualified as herein provided, the Director at his election may declare this Agreement terminated.

ARTICLE IX—ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT

9.1 Costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of Working Interests; all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of Working Interests, whether one or more, separately or collectively.

9.2 Any agreement or agreements entered into between the Working Interest Owners and the Unit Operator as provided in this Article, whether one or more, are herein referred to as the "Unit Operating Agreement".

9.3 The Unit Operating Agreement shall provide the manner in which the Working Interest Owners shall be entitled to receive their respective share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other contracts, and such other rights and obligations, as between Unit Operator and the Working Interest Owners.

9.4 Neither the Unit Operating Agreement nor any amendment thereto shall be deemed either to modify any of the terms and conditions of this Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement.

9.5 In case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Agreement shall govern.

9.6 Three true copies of any Unit Operating Agreement executed pursuant to this Article IX shall be filed with the Supervisor prior to approval of this Agreement.

ARTICLE X—RIGHTS AND OBLIGATIONS OF UNIT OPERATOR

10.1 Subject to the consent and approval of a Plan of Operation by the Supervisor, the right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting, producing, distributing and/or utilizing Unitized Substances are hereby delegated to, and shall be exercised by, the Unit Operator as provided in this Agreement.

10.2 Upon request by Unit Operator, acceptable evidence of title to geothermal resources interests in the Unitized Land shall be deposited with the Unit Operator, and together with this Agreement shall constitute and define the rights, privileges, and obligations of Unit Operator.

10.3 Nothing in this Agreement shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that the Unit Operator, in its capacity as Unit Operator shall exercise the rights of possession and use vested in the parties hereto only for the purposes specified in this Agreement.

10.4 The Unit Operator shall take such measures as the Supervisor deems appropriate and adequate to prevent drainage of Unitized Substances from Unitized Land by wells on land not subject to this Agreement.

10.5 The Director is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and

development and the quantity and rate of production under this Agreement.

ARTICLE XI—PLAN OF OPERATION

11.1 Concurrently with the submission of this Agreement for approval, Unit Operator shall submit an acceptable Initial Plan of Operation. Said plan shall be as complete and adequate as the Supervisor may determine to be necessary for timely exploration and/or development and to insure proper protection of the environment and conservation of the natural resources of the Unit Area.

11.2 Prior to the expiration of the Initial Plan of Operation, or any subsequent Plan of Operation, Unit Operator shall submit for approval of the Supervisor an acceptable subsequent Plan of Operation for the Unit Area which, when approved by the Supervisor, shall constitute the exploratory and/or development drilling and operating obligations of Unit Operators under this Agreement for the period specified therein.

11.3 Any plan of Operation submitted hereunder shall

(a) Specify the number and locations of any wells to be drilled and the proposed order and time for such drilling, and

(b) To the extent practicable, specify the operating practices regarded as necessary and advisable for proper conservation of natural resources and protection of the environment.

11.4 The Plan of Operation submitted concurrently with this Agreement for approval shall prescribe that within six (6) months after the effective date hereof, the Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor, unless on such effective date a well is being drilled conformably with the terms, hereof, and thereafter continue such drilling diligently until the ----- formation has been tested or until at a lesser depth unitized substances shall be discovered which can be produced in paying quantities (to wit: Quantities sufficient to repay the costs of drilling, completing, and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impracticable, provided, however, that Unit Operator shall not in any event be required to drilling said well to a depth in excess of ----- feet. The Initial Plan of Operation and/or subsequent Plans of Operation submitted under this article shall provide that the Unit Operator shall initiate a continuous drilling program providing for drilling of no less than one well at a time, and allowing no more than six (6) months time to elapse between completion of one well and the beginning of the next well, until a well capable of producing Unitized Substances in paying quantities is completed to the satisfaction of the Supervisor or until it is reasonably proved that the Unitized Land is incapable of producing Unitized Substances in paying quantities in the formations drilled under this Agreement.

11.6 When warranted by unforeseen circumstances, the Supervisor may grant a single extension of any or all of the critical dates for exploratory drilling operations cited in the initial or subsequent Plans of Operation. No such extension shall exceed a period of four (4) months for each well, required by the Initial Plan of Operation.

11.7 Until there is actual production of Unitized Substances, the failure of Unit Operator to timely drill any of the wells provided for in Plans of Operation required under this Article XI or to timely submit an acceptable subsequent Plan of Operations, shall, after notice of default or notice of prospective default to Unit Operator by the Supervisor and after failure of Unit Operator

to remedy any actual default within a reasonable time (as determined by the Supervisor), result in automatic termination of this Agreement effective as of the date of the default, as determined by the Supervisor.

11.8 Separate Plans of Operations may be submitted for separate productive zones, subject to the approval of the Supervisor. Also subject to the approval of the Supervisor, Plans of Operation shall be modified or supplemented when necessary to meet changes in conditions or to protect the interest of all parties to this Agreement.

ARTICLE XII—PARTICIPATING AREAS

12.1 Prior to the commencement of production of Unitized Substances, the Unit Operator shall submit for approval by the Supervisor a schedule (or schedules) of all land then regarded as reasonably proved to be productive from a pool or deposit discovered or developed; all lands in said schedule (or schedules), on approval of the Supervisor, will constitute a Participating Area (or Areas) effective as of the date production commences or the effective date of this Unit Agreement, whichever is later. Said schedule (or schedules) shall also set forth the percentage of Unitized Substances to be allocated, as herein provided, to each tract in the Participating Area (or Areas) so established and shall govern the allocation of production commencing with the effective date of the Participating Area.

12.2 A separate Participating Area shall be established for each separate pool or deposit of Unitized Substances or for any group thereof which is produced as a single pool or deposit and any two or more Participating Areas so established may be combined into one, on approval of the Supervisor. The effective date of any Participating Area established after the commencement of actual production of Unitized Substances shall be the first of the month in which is obtained the knowledge or information on which the establishment of said Participating Area is predicated provided, however, that a more appropriate effective date may be used if justified by the Unit Operator and approved by the Supervisor.

12.3 Any Participating Area (or Areas) established under 12.1 or 12.2 above shall, subject to the approval of the Supervisor, be revised from time to time to include additional land then regarded as reasonably proved to be productive from the pool or deposit for which the Participating Area was established or to include lands necessary to unit operations, or to exclude land then regarded as reasonably proved not to be productive from the pool or deposit for which the Participating Area was established or to exclude land not necessary to unit operations and the schedule (or schedules) of allocation percentages shall be revised accordingly.

12.4 Subject to the limitation cited in 12.1 hereof, the effective date of any revision of a Participating Area established under Articles 12.1 or 12.2 shall be the first of the month in which is obtained the knowledge or information on which such revision is predicated, provided, however, that a more appropriate effective date may be used if justified by the Unit Operator and approved by the Supervisor.

12.5 No land shall be excluded from a Participating Area on account of depletion of the Unitized Substances, except that any Participating Area established under the provisions of this Article XII shall terminate automatically whenever all operations are abandoned in the pool or deposit for which the Participating Area was established.

12.6 Nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of a Participating Area.

ARTICLE XIII—ALLOCATION OF UNITIZED SUBSTANCES

13.1 All Unitized Substances produced from a Participating Area, established under this Agreement, shall be deemed to be produced equally on an acreage basis from the several tracts of Unitized Land within the Participating Area established for such production.

13.2 For the purpose of determining any benefits accruing under this Agreement, each Tract of Unitized Land shall have allocated to it such percentage of said production as the number of acres in the Tract included in the Participating Area bears to the total number of acres of Unitized Land in said Participating Area.

13.3 Allocation of production hereunder for purposes other than for settlement of the royalty obligations of the respective Working Interest Owners, shall be on the basis prescribed in the Unit Operating Agreement whether in conformity with the basis of allocation set forth above or otherwise.

13.4 The Unitized Substances produced from a Participating Area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said Participating Area.

ARTICLE XIV—RELINQUISHMENT OF LEASES

14.1 Pursuant to the provisions of the Federal leases and 43 CFR 3245.1, a lessee of record shall, subject to the provisions of the Unit Operating Agreement, have the right to relinquish any of its interests in leases committed hereto, in whole or in part; provided, that no relinquishment shall be made of interests in land within a Participating Area without the prior approval of the Director.

14.2 A Working Interest Owner may exercise the right to surrender, when such right is vested in it by any non-Federal lease, sublease, or operating agreement, provided that each party who will or might acquire the Working Interest in such lease by such surrender or by forfeiture is bound by the terms of this Agreement, and further provided that no relinquishment shall be made of such land within a Participating Area without the prior written consent of the non-Federal Lessor.

14.3 If as the result of relinquishment, surrender, or forfeiture the Working Interests become vested in the fee owner or lessor of the Unitized Substances, such owner may:

(1) Accept those Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement; or

(2) Lease the portion of such land as is included in a Participating Area established hereunder, subject to this Agreement and the Unit Operating Agreement; and provide for the independent operation of any part of such land that is not then included within a Participating Area established hereunder.

14.4 If the fee owner or lessor of the Unitized Substances does not, (1) accept the Working Interest rights and obligations subject to this Agreement and the Unit Operating Agreement, or (2) lease such lands as provided in 14.3 above within six (6) months after the relinquished, surrendered, or forfeited Working Interest becomes vested in said fee owner or lessor, the Working Interest benefits and obligations accruing to such land under this Agreement and the Unit Operating Agreement shall be shared by the owners of the remaining unitized Working Interests in accordance with their respective Working Interest ownerships, and such owners of Working Interests shall compensate the fee owner or lessor of Unitized Substances in such lands by paying sums equal to the rentals, minimum royalties, and royalties applicable to such lands under the lease or leases in effect when the Working Inter-

ests were relinquished, surrendered, or forfeited.

14.5 Subject to the provisions of 14.4 above, an appropriate accounting and settlement shall be made for all benefits accruing to or payments and expenditures made or incurred on behalf of any surrendered or forfeited Working Interest subsequent to the date of surrender or forfeiture, and payment of any moneys found to be owing by such an accounting shall be made as between the parties within thirty (30) days.

14.6 In the event no Unit Operating Agreement is in existence and a mutually acceptable agreement cannot be consummated between the proper parties, the Supervisor may prescribe such reasonable and equitable conditions of agreement as he deems warranted under the circumstances.

14.7 The exercise of any right vested in a Working Interest Owner to reassign such Working Interest to the party from whom obtained shall be subject to the same conditions as set forth in this Article XIV in regard to the exercise of a right to surrender.

ARTICLE XV—RENTALS AND MINIMUM ROYALTIES

15.1 Any unitized lease on non-Federal land containing provisions which would terminate such lease unless drilling operations are commenced upon the land covered thereby within the time therein specified or rentals are paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provisions of this Agreement, be deemed to accrue as to the portion of the lease not included within a Participating Area and become payable during the term thereof as extended by this Agreement, and until the required drillings are commenced upon the land covered thereby.

15.2 Rentals are payable on Federal leases on or before the anniversary date of each lease year; minimum royalties accrue from the anniversary date of each lease year and are payable at the end of the lease year.

15.3 Beginning with the lease year commencing on or after _____ and for each lease year thereafter, rental or minimum royalty for lands of the United States subject to this Agreement shall be made on the following basis:

(a) An advance annual rental in the amount prescribed in unitized Federal leases, in no event creditable against production royalties, shall be paid for each acre or fraction thereof which is not within a Participating Area.

(b) A minimum royalty shall be charged at the beginning of each lease year (such minimum royalty to be due as of the last day of the lease year and payable within thirty (30) days thereafter) of \$2 an acre or fraction thereof, for all Unitized Acreage within a Participating Area as of the beginning of the lease year. If there is production during the lease year the deficit, if any, between the actual royalty paid and the minimum royalty prescribed herein shall be paid.

15.4 Rental or minimum royalties due on leases committed hereto shall be paid by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator.

15.5 Settlement for royalty interest shall be made by Working Interest Owners responsible therefor under existing contracts, laws, and regulations, or by the Unit Operator, on or before the last day of each month for Unitized Substances produced during the preceding calendar month.

15.6 Royalty due the United States shall be computed as provided in the operating regulations and paid in value as to all Unitized Substances on the basis of the amounts thereof allocated to unitized Federal land

as provided herein at the royalty rate or rates specified in the respective Federal leases.

15.7 Nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental, minimum royalty, or royalty due under their leases.

ARTICLE XVI—OPERATIONS ON
NONPARTICIPATING LAND

16.1 Any party hereto owning or controlling the Working Interest in any Unitized Land having thereon a regular well location may, with the approval of the Supervisor and at such party's sole risk, costs, and expense, drill a well to test any formation of deposit for which a Participating Area has not been established or to test any formation or deposit for which a Participating Area has been established if such location is not within said Participating Area, unless within 30 days of receipt of notice from said party of his intention to drill the well, the Unit Operator elects and commences to drill such a well in like manner as other wells are drilled by the Unit Operator under this Agreement.

16.2 If any well drilled by a Working Interest Owner other than the Unit Operator proves that the land upon which said well is situated may properly be included in a Participating Area, such Participating Area shall be established or enlarged as provided in this Agreement and the well shall thereafter be operated by the Unit Operator in accordance with the terms of this Agreement and the Unit Operating Agreement.

ARTICLE XVII—LEASES AND CONTRACTS
CONFORMED AND EXTENDED

17.1 The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or utilization of geothermal resources on lands committed to this Agreement, are hereby expressly modified and amended only to the extent necessary to make the same conform to the provisions hereof, otherwise said leases, subleases, and contracts shall remain in full force and effect.

17.2 The parties hereto consent that the Secretary shall, by his approval hereof, modify and amend the Federal leases committed hereto and the regulations in respect thereto to the extent necessary to conform said leases and regulations to the provisions of this Agreement.

17.3 The development and/or operation of lands subject to this Agreement under the terms hereof shall be deemed full performance of any obligations for development and operation with respect to each and every separately owned tract subject to this Agreement, regardless of whether there is any development of any particular tract of the Unit Area.

17.4 Drilling and/or producing operations performed hereunder upon any tract of Unitized Lands will be accepted and deemed to be performed upon and for the benefit of each and every tract of Unitized Land.

17.5 Suspension of operations and/or production on all Unitized Lands pursuant to direction or consent of the Secretary or his duly authorized representative shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of Unitized Land. A suspension of operations and/or production limited to specified lands shall be applicable only to such lands.

17.6 Subject to the provisions of Article XV hereof and 17.10 of this Article, each lease, sublease, or contract relating to the exploration, drilling, development, or utilization of geothermal resources of lands other than those of the United States committed to this Agreement, is hereby extended beyond any

such term so provided therein so that it shall be continued for and during the term of this Agreement.

17.7 Subject to the lease renewal and the readjustment provision of the Act, any Federal lease committed hereto may, as to the Unitized Lands, be continued for the term so provided therein, or as extended by law. This subsection shall not operate to extend any lease or portion thereof as to lands excluded from the Unit Area by the contraction thereof.

17.8 Each sublease or contract relating to the operations and development of Unitized Substances from lands of the United States committed to this Agreement shall be continued in force and effect for and during the term of the underlying lease.

17.9 Any Federal lease heretofore or hereafter committed to any such unit plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization.

17.10 Any lease, other than a Federal lease, having only a portion of its land committed hereto shall be segregated as to the portion committed and the portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof. In the event any such lease provides for a lump-sum rental payment, such payment shall be prorated between the portions so segregated in proportion to the acreage of the respective tracts.

17.11 Upon termination of this Agreement, the leases covered hereby may be maintained and continued in force and effect in accordance with the terms, provisions, and conditions of the Act, the lease or leases, and amendments thereto.

ARTICLE XVIII—EFFECTIVE DATE AND TERM

18.1 This Agreement shall become effective upon approval by the Secretary or his duly authorized representative and shall terminate five (5) years from said effective date unless,

(a) Such date of expiration is extended by the Director, or

(b) Unitized Substances are produced or utilized in commercial quantities in which event this Agreement shall continue for so long as Unitized Substances are produced or utilized in commercial quantities, or

(c) This Agreement is terminated prior to the end of said five (5) year period as heretofore provided.

18.2 This Agreement may be terminated at any time by the owners of a majority of the Working Interests, on an acreage basis, with the approval of the Supervisor. Notice of any such approval shall be given by the Unit Operator to all parties hereto.

ARTICLE XIX—APPEARANCES

19.1 Unit Operator shall, after notice to other parties affected, have the right to appear for and on behalf of any and all interests affected hereby before the Department of the Interior, and to appeal from decisions, orders or rulings issued under the regulations of said Department, or to apply for relief from any of said regulations or in any proceedings relative to operations before the Department of the Interior or any other legally constituted authority: *Provided, however,* That any interested parties shall also have the right, at its own expenses, to be heard in any such proceeding.

ARTICLE XX—NO WAIVER OF CERTAIN RIGHTS

20.1 Nothing contained in this Agreement shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense pertaining to the

validity or invalidity of any law of the United States, or regulations issued thereunder, in any way affecting such party or as a waiver by any such party of any right beyond his or its authority to waive.

ARTICLE XXI—UNAVOIDABLE DELAY

21.1 The obligations imposed by this Agreement requiring Unit Operator to commence or continue drilling or to produce or utilize Unitized Substances from any of the land covered by this Agreement, shall be suspended while, but only so long as, Unit Operator, despite the exercise of due care and diligence, is prevented from complying with such obligations, in whole or in part, by strikes, Acts of God, Federal or other applicable law, Federal or other authorized governmental agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of Unit Operator, whether similar to matters herein enumerated or not.

21.2 No unit obligation which is suspended under this section shall become due less than thirty (30) days after it has been determined that the suspension is no longer applicable.

21.3 Determination of creditable "Unavoidable Delay" time shall be made by the Unit Operator subject to approval of the Supervisor.

ARTICLE XXII—POSTPONEMENT OF
OBLIGATIONS

22.1 Notwithstanding any other provisions of this Agreement, the Director, on his own initiative or upon appropriate justification by Unit Operator, may postpone any obligation established by and under this Agreement to commence or continue drilling or to operate on or produce Unitized Substances from lands covered by this Agreement when in his judgement, circumstances warrant such action.

ARTICLE XXIII—NONDISCRIMINATION

23.1 In connection with the performance of work under this Agreement, the Operator agrees to comply with all of the provisions of section 202 (1) to (7) inclusive, of Executive Order 11246 (30 F.R. 12319), which are hereby incorporated by reference in this Agreement.

ARTICLE XXIV—COUNTERPARTS

24.1 This Agreement may be executed in any number of counterparts no one of which needs to be executed by all parties, or may be ratified or consented to by separate instruments in writing specifically referring hereto, and shall be binding upon all parties who have executed such a counterpart, ratification or consent hereto, with the same force and effect as if all such parties had signed the same document.

ARTICLE XXV—SUBSEQUENT JOINDER

25.1 If the owner of any substantial interest in geothermal resources under a tract within the Unit Area fails or refuses to subscribe or consent to this Agreement, the owner of the Working Interest in that tract may withdraw said tract from this Agreement by written notice delivered to the Supervisor and the Unit Operator prior to the approval of this Agreement by the Supervisor.

25.2 Any geothermal resources interests in lands within the Unit Area not committed hereto prior to approval of this Agreement may thereafter be committed by the owner or owners thereof subscribing or consenting to this Agreement, and, if the interest is a Working Interest, by the owner of such interest also subscribing to the Unit Operating Agreement.

25.3 After operations are commenced hereunder, the right of subsequent joinder, as provided in this Article XXV, by a working

PROPOSED RULE MAKING

Interest Owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the Unit Operating Agreement. Joinder to the Unit Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement, if more than one committed Working Interest Owner is involved, in order for the interest to be regarded as committed to this Unit Agreement.

25.4 After final approval hereof, joinder by a nonworking interest owner must be consented to in writing by the Working Interest Owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such nonworking interest. A nonworking interest may not be committed to this Agreement unless the corresponding Working Interest is committed hereto.

25.5 Except as may otherwise herein be provided, subsequent joinders to this Agreement shall be effective as of the first day of the month following the filing with the Supervisor of duly executed counterparts of all or any papers necessary to establish effective commitment of any tract to this Agreement unless objection to such joinder is duly made within sixty (60) days by the Supervisor.

ARTICLE XXVI—COVENANTS RUN WITH THE LAND

26.1 The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer, or conveyance, of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee, or other successor in interest.

26.2 No assignment or transfer of any Working Interest or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic, or certified copy of the instrument of transfer.

ARTICLE XXVII—NOTICES

27.1 All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to the party or sent by postpaid registered or certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party may have furnished in writing to party sending the notice, demand or statement.

ARTICLE XXVIII—LOSS OF TITLE

28.1 In the event title to any tract of Unitized Land shall fall and the true owner cannot be induced to join in this Agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title.

28.2 In the event of a dispute as to title as to any royalty, Working Interest, or other interests subject hereto, payment or delivery on account thereof may be withheld without liability for interest until the dispute is finally settled: *Provided*, That, as to Federal land or leases, no payments of funds due the United States shall be withheld, but such funds shall be deposited as directed by the Supervisor to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

ARTICLE XXIX—TAXES

29.1 The Working Interest Owners shall render and pay for their accounts and the accounts of the owners of nonworking interests all valid taxes on or measured by the Unitized Substances in and under or that may be produced, gathered, and sold or utilized from the land subject to this Agreement after the effective date hereof.

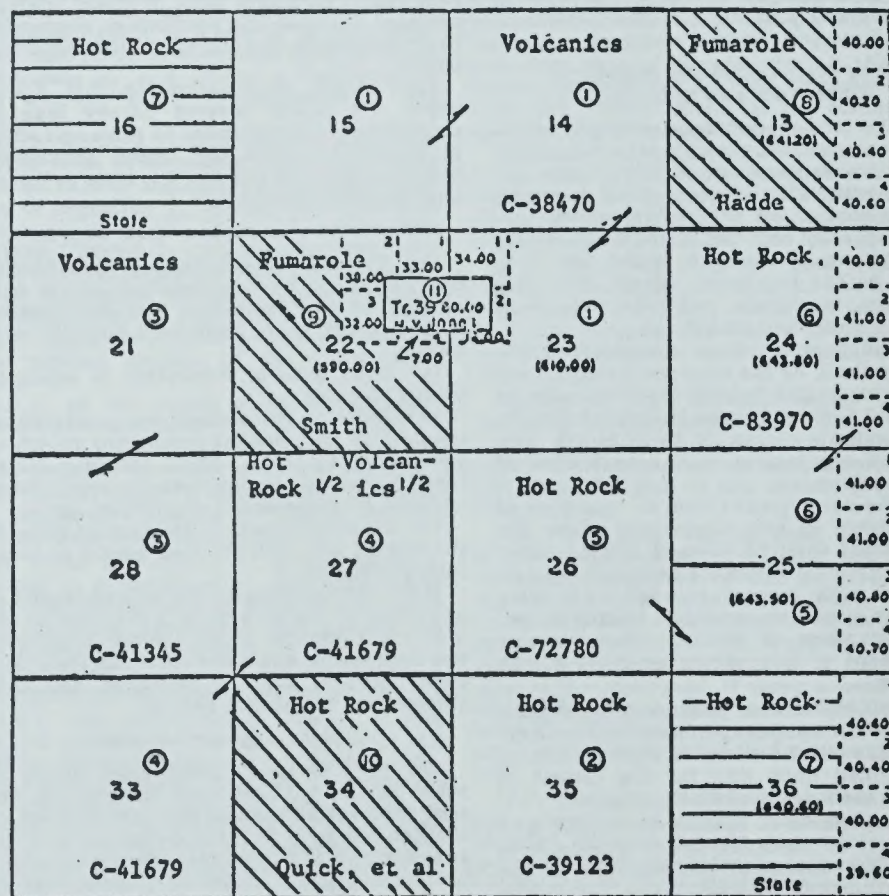
29.2 The Working Interest Owners on each tract may charge a proper proportion of the taxes paid under 29.1 hereof to the owners of nonworking interests in said tract, and may reduce the allocated share of each royalty owner for taxes so paid. No taxes shall be charged to the United States or the State of _____ or to any lessor who has a contract with his lessee which requires the lessee to pay such taxes.

ARTICLE XXX—RELATION OF PARTIES




30.1 It is expressly agreed that the relation of the parties hereto is that of independent contractors and nothing in this Agreement contained, expressed, or implied, nor any operations conducted hereunder, shall create or be deemed to have created a partnership or association between the parties hereto or any of them.

§ 271.13 Sample form of Exhibit A of unit agreement.

EXHIBIT A—BIG VAPOR UNIT AREA, T. 13 N., R. 10 W., M.D.M., California
R. 1 W.



① Means tract number as listed on Exhibit B

-  PUBLIC LAND
-  STATE LAND
-  PATENTED LAND

ARTICLE XXXI—SPECIAL FEDERAL LEASE STIPULATIONS AND/OR CONDITIONS

31.1 Nothing in this Agreement shall modify special lease stipulations and/or conditions applicable to lands of the United States. No modification of the conditions necessary to protect the lands or functions of lands under the jurisdiction of any Federal agency is authorized except with prior consent in writing whereby the authorizing official specifies the modification permitted.

In witness whereof, the parties hereto have caused this Agreement to be executed and have set opposite their respective names the date of execution.

Witnesses: _____ Unit operator (as
_____ unit operator and
_____ as working inter-
_____ est owner)
Witnesses: _____
By _____
Witnesses: _____ Working Interest
_____ Owners:
By _____
Other Interest
_____ Owners:
By _____

§ 271.14 Sample Form of Exhibit B of unit agreement.

EXHIBIT B—BIG VAPOR UNIT AREA, NAPA COUNTY, CALIF., T. 13 N., R. 10 W.

Tract No.	Description of land	No. of acres	Serial No. and expiration date of lease	Basic royalty and ownership percentage	Lessee of record	Working interest and percentage
<i>Federal land</i>						
1.	Sec. 14: All. Sec. 15: All. Sec. 23: Lots 1, 2, 8½, NE¼, E½NW¼.	1,890.00	38470 July 31, 1982.	United States: All.	Volcanics, Inc.	Volcanics, Inc.: All.
2.	Sec. 35: All.	640.00	39123 July 31, 1982.	do.	D. H. Boiler.	Hot Rock Co.: All.
3.	Sec. 21: All.	1,280.00	41345 July 31, 1982.	do.	C. S. Waters—50% D. F. Mann—50%	Volcanics, Co.: 50% Hot Rock Co.: 50%
4.	Sec. 27: All.	1,280.00	41679	do.	H. C. Pipes.	Fumarole Ltd.: All.
5.	Sec. 33: All.					
5.	Sec. 26: All.	961.50	71278 Sept. 31, 1982.	do.	Hot Rock Co.	Hot Rock Co.: All.
6.	Sec. 25: 8½.					
6.	Sec. 24: All.	965.80	83970	do.	H. C. Pipes.	Do.
6.	Sec. 25: N¼.		Application.			
6 Federal tracts 7,017.30 acres or 68.47% of unit area.						
<i>California State land</i>						
7.	Sec. 16: All.	1,280.60	65-67430	State of California: All.	Hot Rock Co.	Hot Rock Co.: All.
7.	Sec. 36: All.					
1 State tract 1,280.60 acres or 12.49% of unit area.						
<i>Patented land</i>						
8.	Sec. 13: All.	641.20	June 30, 1979.	I. B. Hadde: All.	Fumarole, Ltd.	Fumarole, Ltd.: All.
9.	Sec. 22: Lots 1, 2, 3, 4, 8½, NW¼.	590.00	Feb. 28, 1981.	J. P. Smith: All.	do.	Do.
10.	Sec. 34: All.	640.00	Mar. 31, 1981.	A. G. Quick: 75% P. T. Land: 25%	Hot Rock Co.	Hot Rock Co.: All.
11.	Tract 39.	80.00	Apr. 30, 1981.	M. V. Jones: All.	Unleased.	M. V. Jones: All.
3 Patented tracts 1,951.20 acres or 19.04% of unit area.						
Total. 11 tracts 10,249.10 acres in entire unit area.						

§ 271.15 Form of collective bond.

COLLECTIVE CORPORATE SURETY

Known all men by these presents, That we, _____ signing as Principal, for and on behalf of the record owners of unitized substances now or hereafter covered by the unit agreement for this _____, approved _____,

(Name of Unit) (Date) _____ as Surety are (Name and address of Surety) jointly and severally held and firmly bound unto the United States of America in the sum of _____ Dollars,

(Amount of bond) lawful money of the United States, for the use and benefit of and to be paid to the United States and any entryman or patentee of any portion of the unitized land, heretofore entered or patented with the reservation of the geothermal resources deposits to the United States, for which payment well and truly to be made, we find ourselves, and each of us, and each of our heirs, executors, administrators, successors, and assigns by these presents.

The condition of the foregoing obligation is such that, whereas the Secretary on _____ approved under the provisions (Date) of the Geothermal Steam Act of 1970, a unit agreement for the development and operation of the _____; and (Name of Unit and State)

Whereas said Principal and record owners of unitized substances, pursuant to said unit agreement, have entered into certain covenants and agreements as set forth therein, under which operations are to be conducted; and

Whereas said Principal as Unit Operator has assumed the duties and obligations of

the respective owners of unitized substances as defined in said unit agreement; and

Whereas said Principal and surety agree to remain bound in the full amount of the bond for failure to comply with the terms of the unit agreement, and the payment of rentals, minimum royalties, and royalties due under the Federal leases committed to said unit agreement; and

Whereas the Surety hereby waives any right of notice of and agrees that this bond may remain in force and effect notwithstanding:

(a) Any additions to or change in the ownership of the unitized substances herein described.

(b) Any suspension of the drilling or producing requirements or waiver, suspension or reduction of rental or minimum royalty payments or reduction of royalties pursuant to applicable laws or regulations thereunder; and

Whereas said Principal and Surety agree to the payment of compensatory royalty under the regulations of the Interior Department in lieu of drilling necessary offset wells in the event of drainage; and

Whereas nothing herein contained shall preclude the United States from requiring an additional bond at any time when deemed necessary:

Now, therefore, if the said Principal shall faithfully comply with all of the provisions of the above-identified unit agreement and with the terms of the leases committed thereto, then the above obligation is to be of no effect; otherwise to remain in full force and virtue.

Signed, sealed, and delivered this _____ day of _____, 19____, in the presence of:

Witnesses:

(Principal)

(Surety)

§ 271.16 Form of designation of successor unit operator by working interest owners.

Designation of successor Unit Operator _____, Unit Area, County of _____ State of _____, No. _____.

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and the owners of unitized working interest, hereinafter designated as "Second Parties,"

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24, 1970, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein _____ is designated as Unit Operator; and

Whereas said _____ has resigned as such Operator,¹ and the designation of a successor Unit Operator is now required pursuant to the terms thereof; and

Whereas First Party has been and hereby is designated by Second Parties as a Unit Operator, and said First Party desires to assume all the rights, duties, and obligations of Unit Operator under the said unit agreement.

Now, therefore, in consideration of the premises hereinbefore set forth and the promises hereinafter stated, the First Party hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of the _____ unit agreement, and the Second Parties covenant and agree that, effective upon approval of this indenture by the Supervisor, of the Geological Survey, First Party shall be granted the exclusive right and privilege of exercising any and all rights and privileges and Unit Operator, pursuant to the terms and conditions of said unit agreement; said unit agreement being hereby incorporated herein by references and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designating _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor,
U.S. Geological Survey.

§ 271.17 Form of change in unit operator by assignment.

Change in Unit Operator _____ unit Area, County of _____, State of _____, No. _____.

This indenture, dated as of the _____ day of _____, 19____, by and between _____ hereinafter designated as "First Party," and _____ hereinafter designated as "Second Party."

Witnesseth: Whereas under the provisions of the Geothermal Steam Act of December 24,

¹ Where the designation of a successor Unit Operator is required for any reason other than resignation, such reason shall be substituted for the one stated.

PROPOSED RULE MAKING

1972, 84 Stat. 1566, the Secretary on the _____ day of _____, 19____, approved a unit agreement for the _____ Unit Area, wherein the First Party is designated as Unit Operator; and

Whereas the First Party desires to transfer, assign, release, and quitclaim, and the Second Party desires to assume all the rights, duties, and obligations of Unit Operator under the unit agreement; and

Whereas for sufficient and valuable consideration, the receipt whereof is hereby acknowledged, the First Party has transferred, conveyed and assigned all his/its rights under certain operating agreements involving lands within the area set forth in said unit agreement unto the Second Party:

Now, therefore, in consideration of the premises hereinbefore set forth, the First Party does hereby transfer, assign, release, and quitclaim unto Second Party all of First Party's rights, duties and obligations as Unit Operator under said unit agreement; and

Second Party hereby accept this assignment and hereby covenants and agrees to fulfill the duties and assume the obligations of Unit Operator under and pursuant to all the terms of said unit agreement to the full extent set forth in this assignment, effective upon approval of this indenture by the Supervisor of the Geological Survey; said unit agreement being hereby incorporated herein by reference and made a part hereof as fully and effectively as though said unit agreement were expressly set forth in this instrument.

In witness whereof, the parties hereto have executed this instrument as of the date hereinabove set forth.

(First Party)

(Witnesses)

(Second Party)

(Witnesses)

I hereby approve the foregoing indenture designated _____ as Unit Operator under the unit agreement for the _____ Unit Area, this _____ day of _____, 19____.

Supervisor, U.S.
Geological Survey

[FR Doc.72-6711 Filed 5-2-72;8:45 am]

1. RESPONSE TO COMMENTS RECEIVED PERTAINING TO THE GEOTHERMAL RESOURCES LEASING REGULATIONS, 43 CFR 3200, PUBLISHED IN THE FEDERAL REGISTER ON JULY 23, 1971, AS PROPOSED RULE MAKING (36 F.R. 142). (Comments and responses to the revised regulations as published on November 29, 1972 follow that set of regulations.)

Comments that were not specific as to a particular section or those which included generalized comments in connection with a particular section are being considered as general comments.

General Comments

Comment State of Oregon, I-122.

The States have historically shared 37 1/2% of the Federal revenue coming from use of Federal lands for power facilities under the FPC. I suggest that similar sharing be accomplished for geothermal resources.

Response

The Act provides for disposition of all monies received in the same manner as monies received from the sale of public lands or the sale of public lands or the sale of other lands.

Comment Oregon Environmental Council, I-402, I-686.

Issue only a limited number of pilot project leases for the development of geothermal power and only after public hearings and the filing of an Environmental Impact Statement.

Response

The discussion of alternatives in the final environmental impact statement has been expanded to include consideration of a pilot leasing program.

Comment Magma Power Company, I-384.

Add to the proposed regulations a provision permitting development of geothermal resources in the event of conflicting unpatented mining claims if all interested parties reach an agreement.

Response

The Secretary has present authority to issue leases in lands encumbered by unpatented mining claims located after the enactment of P.L. 585. This Act also provided procedures for resolving conflicts created by mining claims located prior to August 1950 and in conflict with leasing act minerals. Parties of interest can reach a private agreement at any time under P.L. 585 procedures.

Comment Magma Power Company, I-384; Bureau of Land Management, I-26.

Incorporate by reference in the proposed regulations the provisions of Group 1800, Chapter II of 43CFR insofar as they apply to matters arising under the Geothermal Steam Act of 1970.

Response

The regulations as now proposed are subject to the provisions of Group 1800, Chapter II of title 43 Code of Federal Regulations. No action taken. It is provided in Section 3000.4.

Comment Magma Power Company, I-373; I-384; I-390; and I-607.

It is deemed advisable to centralize authority and responsibility with respect to geothermal leasing, including the availability of information, the consideration of environmental factors and the granting and processing of leases and processing the few preference rights authorized under the Geothermal Steam Act of 1970.

Response

No action taken on the comment. The regulations should provide the flexibility needed to allow for future reorganization. (Current proposed rule making uses more generalized titles to identify the various action officers.)

Comment Gulf Oil Company, I-353.

The regulations can be more easily understood if the Sections were rearranged to appear in the same order as the time sequence to which they pertain and certain changes were made in nomenclature, especially to use the words "application" and "applicant" for noncompetitive leases and the words "nomination" and "nominator" for competitive leases.

Response

Sections rearranged for greater convenience. No action taken on remainder of comment.

Comment Center for Law and Social Policy, I-257.

As regards land use, the Department should provide in its regulations that lands adjacent to any area excepted from leasing shall be withheld from exploration or leasing until the Secretary of Interior has conducted detailed studies to determine the impact of geothermal resource development on such areas and made a specific finding that exploratory activities, drilling, or any development or operational activities would not adversely affect such areas.

Response

Regulations are considered sufficient to cover this proposal. No action taken on comment.

Comment American Thermal Resources, Inc., I-163.

The advantages of non-competitive leasing, as provided in Sec. 4 of Public Law 91-581, be carefully considered in administering geothermal leasing on Federal lands.

Response

No action taken on the comment as the regulations are considered adequate in this regard.

Comment American Public Power Association, I-133.

The Department of Interior's proposed leasing regulations do not provide safeguards to prevent monopolistic control of publicly-owned geothermal resources.

Response

No action taken on comment. Acreage limitations imposed by the Act are considered to be sufficient safeguards to prevent monopoly of the resource.

Comment Finn, Donald F. X., I-319.

The word "acceptable" should be replaced or modified by the term "reasonable" or "reasonably". May I also suggest that directives issued under the authority of the Proposed Rules be similarly qualified or modified.

Response

No action taken on the comment. The comment only replaced one hard to define standard with a similar standard.

Section 3000.0-5(a)

Comment Bureau of Land Management, I-40.

(a)(i) Gas . . . gaseous or rarefied state at ordinary temperature and pressure . . ." This "definition" is not definitive. ". . . ordinary temperature and pressure . . ." should be stated in standard units of measurement. (ii) The ". . . Oil, crude oil. . ." definition also is clumsy.

Response

No action taken on this comment because noxious gases react differently at different temperatures and pressures.

Section 3000.0-5(m)(3)

Comment Bureau of Land Management, I-40.

(j)(3) "segregated lands" should include those segregated from operation of the public land laws by proper classification.

Response

No action taken on the comment. An amendment to the regulations should be considered whereby properly classified lands would be recognized. (The current proposed rule making accommodates this comment. See Section 3000.0-5(K).)

Section 3045.0-1 (Current proposed rule making renumbered Subpart as 3209.)

Comment Senator Alan Bible, I-1.

The primary difficulty under the Department's Proposed Rules is that participants in a geothermal exploratory program on noncompetitive lands would have no assurance that they would be able to acquire a lease on any geothermal resources that their expenditures may discover.

Response

The sole purpose of 43 CFR Subpart 3045 is to establish authority for conducting exploration of the public lands for oil and gas or geothermal resources and to provide for control of any activity relating to the search for evidence of oil and gas or geothermal resources which requires physical presence upon the land and which result in damage to public lands or resources therein. It also provides the means whereby a prospective applicant may make an intelligent decision as to where to lease. (Current proposed rule making limits Subpart 3209 to geothermal resources.)

Section 3045.0-5(a)

Comment State of California, I-78.

Section 3045.0-5 Definitions

It is not clear whether temperature gradient wells are included under geophysical operations.

Response

The regulations do not allow temperature gradient wells to be drilled. The regulations should be amended to provide for such exploration under the supervision of the Supervisor as to the area of operation. (Current proposed rule making provides for drilling shallow temperature gradient wells. See Section 3209.0-5(a).)

Section 3045.1-1

Comment Southern California Edison, I-470; Getty Oil Co., I-325; Southern Pacific Land Company, I-502.

District Managers should maintain the Notices of Intent in a confidential status for at least five (5) years.

Response

No action taken on this comment. Information submitted with "Notice of Intent" does not meet the confidential criteria of the Freedom of Information Act.

Section 3045.1-1

Comment Bureau of Land Management, I-40.

The regulations provide for the filing of a "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations" on a form approved by the Director.

This section should provide a means whereby permission to conduct Oil and Gas or Geothermal Resources Exploration Operations may be granted by the District Manager. The "Notice... ." form should provide space for special stipulations and space for approval by signature of the District Manager.

Response

The regulations now requires the "Notice of intent" to be filed, prior to entry upon the lands, for approval with the authorized officer. (Current proposed rule making accommodates this suggestion. See sample Form 3209-1 in Volume I, Chapter III of final environmental impact statement.)

Section 3045.1-1

Comment Western Geothermal Inc., I-547.

§3045.1-1 This paragraph deals with the "Notice of Intent to Conduct Oil and Gas or Geothermal Resources Exploration Operations". While it is not entirely clear from the proposed regulation, we presume that this notice will be the first step in obtaining a geothermal lease and consequent production on Federal lands. We have the following questions with respect to the notice:

(a) Does filing the notice give the filer an exclusive right to prospect the area covered for a minimum period of time? It would seem to us it should.

(b) If a filer has explored ground pursuant to this notice, does he then have a preferential right to receive a lease covering that ground? Again, it would seem to us he should.

(c) Is there an acreage limitation, either maximum, minimum or geographic, as to the ground that may be covered by a given notice? We have no suggestion on this point but believe the regulation should state an answer to this question.

(d) We presume that this notice will be more applicable in areas which can be leased non-competitively than in areas which must be leased competitively. Is this correct, again we have no recommendation but believe the regulations should be made clear on this point.

Response

The regulations do not specify a time limitation or acreage limitation. Preferential or exclusive rights do not accrue to the permittee as a result of filing of the Notice of Intent. Permits may be issued for any area.

Section 3045.1-1

Comment Duke University, I-279.

All test wells drilled on Federal lands, should be drilled under the supervision of the United States Geological Survey.

Response

No action taken on comment. Test wells cannot be drilled under the authority of subpart 3045 of these regulations. (See sample Notice of Intent Form 3209-1, Volume I, Chapter III of the final environmental impact statement.)

Section 3045.1-1

Comment Union Oil Company, I-522.

This provision requires the names and addresses of both the person, association or corporation for whom the operations are being conducted, as well as, the person who will be in charge of the actual exploration activities. We believe that the name and address of the contractor should be sufficient.

Response

No action taken on comment. This information is needed to assure prompt compliance with the terms and conditions of the "Notice."

Section 3045.1-1

Comment: Center for Law and Social Policy, I-192.

Minimum terms and conditions to protect the environment should be set forth in the regulations rather than left to the discretion of the Director, Bureau of Land Management.

Response

The regulations as drafted are considered adequate as they provide the flexibility needed for all measures necessary to protect the environment in each specific area on a site-sensitive basis.

Section 3045.1-1

Comment Center for Law and Social Policy, I-192.

"Notice of Intent" should state ultimate planned use of resources, possible environmental changes and intended repairs.

Response

No action taken on the comment. The regulations as drafted are considered adequate to protect the environment. The "Notice of Intent" will contain terms and conditions deemed necessary for the conservation of the resources and protection of the environment.

Section 3045.2

Comment Lake County Geothermal Control Council, I-367;
Sierra Club, I-440.

This regulation appears to assign to the operator (lessee) the responsibility of specifying damages to the terrain and other environmental effects which are to be rectified when an operation is completed.

Response

The operator must file a "Notice of Completion." The area then would be inspected by the District Manager to determine whether all of the terms and conditions had been met. The operator would be required to rectify damage.

Section 3045.3

Comment Bureau of Land Management, I-40.

The proposed rules now provide for a \$5,000.00 surety bond to be filed with the District Manager for each "Notice of Intent . . ." filed. There is now no limit to the area that can be included in the "Notice of Intent . . ." except the whim of the applicant. \$5,000.00 would not provide a very extensive rehabilitation fund should the area to be explored prove to be very fragile.

This section should provide for an acreage limitation for inclusion in each "Notice of Intent . . ." with perhaps no limit on the number of "Notices" providing a minimum of \$5,000.00 surety bond is filed with each except as provided under State and Nationwide bonding.

Response

The regulations were amended to provide for (1) a bond of not less than \$5,000, (2) the authorized officer's approval which allows discretion as to the acreage which will be allowed in each permit.

Section 3045.3-1

Comment Bureau of Land Management, I-26.

3045.07 cross references 43 CFR 3104.9 and 43 CFR 3104.15. There is no 43 CFR 3104.15. We believe it should be 3104.9-5.

It would appear that the third paragraph under 3045.3 should be designated (c) instead of 3.

Response

Section 3045.0-7 has been deleted. The bonding provisions for conducting geothermal resource exploration have been relocated in section 3045.3-1, 3045.3-2 and 3045.3-3. (See Section 3209.4 of current proposed rule making.)

Section 3045.3-1(a)

Comment Lake County Geothermal Control Council, I-367;
Sierra Club, I-440.

The bonding per well and for the coverage of nationwide and statewide operations seems far too small.

Response

The regulations were amended to redesignated section 3104.9(a) as section 3045.3-1(a). Section 3045.3-1(a) has been amended to require a bond of not less than \$5,000 which allows the District Manager flexibility to establish the bonding requirement commensurate with the potential damage anticipated. (See Section 3209.4-1 of current proposed rule making.)

Section 3200.0-5(d)

Comment City of Los Angeles, I-130, I-132; Birchan Corporation, I-167; Geothermal Resources International, I-640; Pacific Gas and Electric Company, I-410.

Clarify the definition of this term to show whether, under a contract for purchase of geothermal steam or other geothermal products, the buyer has an "interest". An overriding royalty share should be specifically inserted as being an interest in the lease.

Response

No action was taken on the comments. Section 3200.0-5(c) defines "Sole party in interest" to mean a party who is and will be vested with all legal and equitable rights under the lease, which includes an overriding royalty interest. Under this definition, a purchaser of geothermal steam or other geothermal products is not a party of interest in the lease. Consideration will be given to expressly add "overriding royalty interest" to the definition. (Definition of "interest in the lease" redesignated as Section 3200.0-5(f) of current proposed rule making and the comment concerning overriding royalty interest has been accommodated.)

Section 3200.0-5(f)

Comment Bureau of Land Management, I-33.

3200.0-5. A definition of "primary term" should be provided either at this point or at 3203.1-2.

Response

The regulations were amended to include a definition of the term "primary term". (Appears in Section 3200.0-5(1) in Current proposed rule making.)

Section 3200.0-5(j)

Comment Garrison, Lowell E., I-323, I-658; Gilmore and Gilmore, I-338; Standard Oil Company of California, I-503; Union Oil Company, I-557; Geothermal Resources International, I-640.

The definition of "Known Geothermal Resources Area" (Section 2 e) is non-technical, imprecise, and too broad.

Response

Section 3000.0-5(d) has been redesignated as section 3200.0-5(j) and amended to clarify the definition more especially "competitive interest". (Appears in 3200.0-5(k) of the current proposed rule making.)

Section 3200.0-6

Comment Birchan Corporation, I-167.

It is suggested that a new part 3150, entitled "Geothermal Resources Exploratory Permits for Non-Competitive Lands", be inserted into the Proposed Rules. The provisions of this subsection would allow exploration of non-competitive areas to be undertaken with the knowledge that any potential geothermal source located could be acquired on a non-competitive basis by those conducting the exploratory work.

Response

No action taken on this comment. There is no statutory authority to accomodate this comment.

Section 3200.0-6(a)

Comment Oregon Enviornmental Council, I-402.

In addition, the OEC requests that Section 3200-6 of the proposed rules be amplified to include critieria for selection of tracts for leasing from the land eligible for leasing.

Response

No action taken on comment. Due to diverse conditions, technological, social and economic, existing in various geologic provinces throughout the public land states it is not feasible to establish criteria in the regulations. Criteria should be established on an area by area basis after a thorough evaluation of the resources contained within the general area and the potential effect of geothermal resources operations upon the resources of the area and its total environment.

Section 3200.0-6(a)

Comment Department of Agriculture, I-9.

We suggest that the number of alternative policies considered be expanded to include explicitly the alternative of distributing leases more tentatively and slowly than is implied in the Notice of Proposed Rule Making for the Geothermal Leasing activity. (The proposed rules imply that all qualified applicants will be granted leases without prescribed delay).

Response

Sections 3200.0-6, "preleasing procedures" and 3210.1 "Availability of land" will allow for the proper evaluation of the potential impact prior to leasing. The final environmental impact statement has been expanded to include a discussion of alternative leasing policies.

Section 3200.0-6(b)

Comment Duke University, I-279; Lake County Geothermal Control Council, I-367; Oregon Environmental Council, I-402; Sierra Club, I-436, I-440, I-702.

The Proposed Rules concerns Preleasing Procedures and the selection of tracts for leasing. Recommends that this section be amended to require the submission of a preliminary environmental report prior to mandatory public hearings Before a tract is finally selected for leasing.

Response

No action taken on comment. The regulations provide the flexibility needed to administer a geothermal resources leasing program and also provide that the Director or the head of the agency charged with the administration of the surface shall prepare or have prepared reports, describing to the extent known, resources contained within the general area and the potential effect of geothermal resources operations upon the resources of the area and its total environment. These reports will provide the data needed on an area basis to properly evaluate and determine the need for public hearings prior to leasing. (Current proposed rule making provides that the Director, where he determines that issuance of leases would constitute a major Federal action significantly affecting the quality of the human environment, shall issue no leases unless an environmental impact statement is prepared. See Section 3200.0-6.)

Section 3200.0-6(b)

Comment State of Oregon, I-107.

"We recommend that this section be revised to require review and comment by concerned state agencies (i.e., Department of Environmental Quality, Forestry, Fish and Game, Water Resources) on any proposed leases in Oregon under the Geothermal Steam Act of 1970."

Response

The regulations provide that the Director may request and consider the views and recommendations of State agencies regarding leasing of Federal lands and their resources. Procedures implementing these regulations should require State agency participation in the decision making process, where appropriate.

Section 3200.0-6(b)

Comment State of California, I-78, I-87; State of Colorado, I-89, I-90.

A definite attempt must be made to establish a mechanism whereby the state, and other local governmental agencies, may play a significant role in geothermal regulation on all lands within the state.

Response

No action taken on the comment. The regulations provide for the Director to consult with State agencies and to consider their views and recommendations on land use, natural resource and environmental matters.

Section 3200.0-6 (b)

Comment Gulf Oil Company, I-343, I-353, I-359

No impact statement other than the initial area impact statement, prior to leasing, provided for in Section 3200.0-6 should be required.

Response

Action taken on the comment. Regulation has been redrafted to require evaluation of environmental impact of possible power generating plants and transmission lines prior to leasing. (Current proposed rule making provides that the Director, where he determines that issuance of leases would constitute a major Federal action significantly affecting the quality of the human environment, shall issue no leases unless an environmental impact statement is prepared. See Section 3200.0-6.)

Section 3200.0-8(a)

Comment Geological Survey, I-47; Gulf Oil Company, I-353; Pacific Gas and Electric Company, I-422, I-526, I-626; Signal Oil and Gas Company, I-461; Union Oil Company, I-522, I-526, I-557; Geothermal Resources International, I-640.

The Steam Act's Section 14 provides "lessee shall be entitled to use so much of the surface of the land covered by his geothermal permit as . . . may be . . . necessary for production, utilization and conservation of geothermal resources."

Response

The regulations now provide that a lessee is entitled to use so much of the leased lands, or may apply for its right to use so much of other Federal lands, as may be deemed necessary for the production, utilization, and conservation of geothermal resources. In either case such use will be authorized only under a separate permit. Section 3200.0-6 requires when an area is initially considered for geothermal leasing the authorized officer will consider the potential effect of geothermal resources operations upon the resources of the area and its total environment.

Section 3200.0-8(a)

Comment Department of Agriculture, I-11.

Clarify authorities and responsibilities and promote cooperation during geothermal resource evaluation and development.

Response

The regulations in section 3200.0-6, Preleasing procedures; and 3204.1, General; have been modified to set forth the Surface Management Agencies responsibilities.

Section 3200.0-8(a)

Comment Getty Oil Company, I-325; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502.

Terms and conditions of any permit issued under these regulations should be published prior to publication of the final regulations or the issuance of a lease. The public should be allowed to comment on these proposed terms and conditions prior to the finalization of such permit and regulations. Permits should not be terminable without cause.

Response

No action taken on comments. Terms and conditions of permits will vary from area to area. Impracticable to publish standard permit terms or finalize such terms in the regulations. The authorized officer must evaluate and determine permit terms prior to permit issuance and where possible prior to lease issuance. Permits will be issued under a separate land use permit and will be subject to review and appeals procedures prior to termination.

Section 3200.0-8

Comment Western Rockhound Association, Inc., I-550.

We would appreciate assurance that the recreational use of the public lands will be permitted on leased areas to the maximum extent possible. This appears to be inferred as a permissive activity in the last line of paragraph 3200.0-8 b which states ". . . , or other authorized use" but we believe it should be more directly stated to permit the non commercial recreational use of lands for Geothermal Resources to the maximum extent possible.

Response

No action taken on comment. It would be impractical to try to recognize every conceivable use in these regulations. To the extent feasible, other compatible land uses will be permitted.

Section 3201.1-1

Comment Phillips Petroleum Company, I-429.

It should be made clear that one geothermal lease can cover public domain and acquired lands so long as they are contiguous and any special stipulations required by Section 15 of the Act are made a part of the lease.

Response

The regulations as now proposed provide that geothermal leases may be issued in combination or separately for public domain, acquired, withdrawn, reserved or segregated lands.

Section 3201.1-1(c)

Comment Signal Oil and Gas Company, I-461.

It would appear to be more desirable for this language to contain the following: ". . . by the United States subject to a reservation of minerals to the United States" rather than ". . . a reservation of geothermal resources" which, as you know, has not been contained in Patents with mineral reservations issued prior to the "Geothermal Steam Act of 1970" and would, in our opinion, tend to prejudice the Federal government's claim to geothermal resources as a reserved mineral in all Patents issued prior to said Act.

Response

No action taken on comment. Use of words, "reservation of geothermal resources," is considered so restrictive as to preclude leasing of such resources where patent contained reservation of minerals generally. Issue will be decided by courts. See Section 21(b) of the Geothermal Steam Act.

Section 3201.1-2(a)

Comment Getty Oil Company, I-325; Southern California Edison Company, I-470, I-591; Southern Pacific Land Company, I-502.

It is, our strong recommendation that provisions for such joint operations on withdrawn lands be provided for in the regulations that will finally control the development and use of geothermal energy wherever it may be found throughout the United States.

Response

Regulations have been revised accordingly. Manual procedures will be required.

Section 3201.1-2(b)

Comment Magma Power Company, I-384.

Section 3201.1-2(b) provides that the Secretary shall not issue leases for certain lands. However, the regulation goes beyond Section 15(a) of the Act, upon which this regulation is undoubtedly based. This section should be redrafted so as to conform with the Act. As it now reads it goes beyond the provisions of the Act.

Response

No action taken on the comment. Provision retained to provide necessary land management authority.

Section 3201.1-2(b)

Comment Magma Power Company, I-373, I-384.

In Section 3201.1-2(b) it is provided that, "Notwithstanding any other provision in these regulations, geothermal leases shall not be issued for:

Lands which the Secretary has identified or may identify as being necessary to the performance of his or any other federal agency's functions and on which geothermal resources development would interfere with such functions in his judgment; or lands respecting which the Secretary has made or may make a finding that the issuance of geothermal leases would be contrary to the public interest." These provision could clearly deny preference rights and negate the congressional intent in this regard.

Response

The regulations as now proposed retain the Secretary's discretion to withhold certain land from Geothermal Resources Leasing, provided he determines that such leasing would interfere with identified needs or functions. This discretion is needed whereby the Secretary can fulfill his obligation of proper multiple land use management. Section 3230.1-1 protects the lessees, permittees or claimants preference rights.

Section 3201.1-2(b)

Comment Center for Law and Social Policy, I-257; Oregon Environmental Council, I-402, I-686.

Not issue leases in Wilderness Areas or possible future Wilderness areas or in adjacent areas, or in areas that have surface hot springs where recreation takes place or is possible. Leases should not be issued in or near National Wild and Scenic Rivers or the National Trail System or for lands in primitive, roadless, natural or pioneer areas or lands of special ecological, scenic, wildlife, geological, historical or scientific value.

Response

The regulations, as now proposed, provide that the listed areas will be evaluated prior to issuance of any geothermal resource lease and where such evaluation results in a determination against leasing no lease will be issued.

Section 3201.1-2(b)(2)

Comment Bureau of Land Management, I-33.

3201.1-2(b) - We suggest that "lands neighboring such reserved lands" be defined. Otherwise, it will vary with each office's interpretation.

Response

This is not considered a regulatory subject. It will be covered under manual procedures.

Section 3201.1-2(b)(2)

Comment Bureau of Reclamation, I-42.

There is not even a requirement that such adverse comments as might be submitted by the head of the concerned agency are to be carefully weighed and, at the very least, reviewed at the Secretarial level.

We urge that the proposed regulations be revised, by incorporating a formula for which there is precedent in similar cases of proposed leasing or licensing of reserved or withdrawn lands.

Response

The regulations have been revised to allow review by Assistant Secretaries. (The current proposed rule making eliminates the procedure for review by appropriate Assistant Secretaries. However, existing internal procedures will continue to operate to permit all views to be presented and aired with the Secretary retaining final authority on whether to lease.)

Section 3201.1-4

Comment Jessen, Frank W., I-366.

I find quite frankly many points which seem to be to be detrimental rather than beneficial for development of such resources. I am particularly referring to Paragraph 3201.1-4 wherein the Federal Power Commission is again brought into the picture. In having to consent to and to provide terms and conditions which may adequately insure proper utilization of the lands for power and related purposes. My reaction to this is that the Federal Power Commission should be kept out of the picture entirely since the net result of this source of energy is like that which has resulted from rules and regulations imposed upon the gas industry.

Response

The regulations, as now proposed, retain the provisions of this section. In all cases the land management agency must be consulted as to lease terms and conditions for the protection of the land, resources and the environment. The Federal Power Commission will not be acting as a regulating agency in this regard.

Section 3201.1-6

Comment Center for Law and Social Policies, I-192.

Various science, recreational and wilderness areas, wild and scenic rivers, trails, and surface thermal spots should also be excepted from leasing.

Response

No action taken on the comment. The Act does not provide for these lands to be excluded from geothermal leasing. The lands so designated may be excepted from leasing under the discretionary authority of the Secretary.

Section 3201.2(a)

Comment Anadarko Production Company, I-166; Joseph I. O'Neill, I-401; Pacific Gas and Electric Company, I-410.

Depending on the interpretation of 3200.0-3, "interest in lease," the 20,480 acre limitation may effectively hinder, rather than promote, the orderly development of geothermal resources on government lands.

Response

The regulations paraphrase the Act as to acreage limitation per State.

Section 3201.2(a)

Comment Getty Oil Company, I-325; Magma Power Company, I-373; Union Oil Company, I-526, I-557.

The rules and regulations are not clear on the matter whether applications or leases are subject to the 20,480 acreage limitation per State.

Response

The regulations should be amended to include applications as chargeable acreage except nominations filed under Subpart 3211 of these regulations. (Current proposed rule making provide for charging acreage included in applications once priority is determined. See Section 3201.2(a).)

Section 3201.2(a)

Comment Phillips Petroleum Company, I-429.

3201.2 does not refer to governmental units or municipalities.

Response

The regulations have been redrafted to include municipalities in Section 3201.2 which make them consistent with the provisions of Section 3202.1. (Current proposed rule making uses the term "geothermal unit" which is all-inclusive and does include municipalities. See Section 3201.2(a).)

Section 3201.2(b)

Comment Southern California Edison Company, I-470; Southern Pacific Land Company, I-502.

The Secretary should determine that one of the conditions of the lease will be that the Federal Government should receive a certain percent of the effluent produced from the leased land, then the percentage of the total acreage leased under such conditions as determined by computing the Government's share of the effluent to the total effluent produced should not be allocated as chargeable acreage.

Response

No action taken on the comment. Authority not provided by the Act.

Section 3201.2(b)

Comment Southern California Edison Co., I-470; Southern Pacific Land Company, I-502.

In the case of a lease filed on an unknown geothermal area, the acreage should not be chargeable until fifteen (15) days following the drawing.

Response

No action taken on application. Acreage in simultaneous filings charged only after successful applicant has been determined.

Comment

The provision in subdivision (b) of Section 3201.2 with respect to prorata chargeable acreage has no application to the acreage limitation with respect to preference rights under the Act.

Response

The regulations conform to the provision of the Act. The Act does not grant this interpretation or application.

Section 3201.2(b)

Comment Magma Power Company, I-373.

Add a clarifying statement to the effect that the chargeable interest of any person shall be deducted from the chargeable portion of others in the same leased land.

Response

The regulations provide for prorating lease acreage.

Section 3201.2(c)

Comment Magma Power Company, I-373; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502.

I do not quite understand the meaning of the last sentence of subdivision (c). It seems contradictory to the other provisions of that subdivision and should be clarified.

Response

The regulations were not clarified. This sentence should be redrafted for clarity and to provide that acreage held in common should be charged to each lessee on a prorata basis. Lessees, where appropriate should be required, prior to lease issuance, to designate lease acreage chargeability per lessee. (Current proposed rule making redrafted the sentence to clarify meaning. See Section 3201.2(b)(2).)

Section 3201.2(c)

Comment Getty Oil Company, I-325

This provision should be revised to permit a group of co-tenants to hold up to 61,440 chargeable acres; provided, however, that no individual co-tenant could directly or indirectly hold or control more than 20,480 acres.

Response

The regulations were not amended. This concept not authorized by the act.

Section 3202.1

Comment ABT Associates, Inc., I-632.

My modification simply states "Leases may be issued only to (1) Persons who have resided in the United States for five or more years, including four of the last five years; (2) Associations of such persons, as long as at least 80 per cent of the membership shall include persons who have resided in the United States for five or more years; (3) Corporations organized under the laws of the United States, any state or the District of Columbia; or (4) Environmental units, without limitation, municipalities. The term "association" includes a partnership.

Response

No action taken on the comment. The regulations now paraphrase the qualification provisions of the Act.

Section 3202.1

Comment Bureau of Land Management, I-33.

Does "governmental unit" include the United States or agencies or instrumentalities thereof?

Response

No action taken on this comment. The term "governmental unit" is interpreted not to include Federal Government.

Section 3202.2-1(b)

Comment ABT Associates, Inc., I-632; Economic Opportunity Commission of Imperial Valley, Inc., I-290.

The regulations should be modified by adding the following: Preference in determining to whom such leases may be issued shall be in the following order; non-profit local organizations whose membership meets federal OEO poverty guidelines and whose primary purpose is economic development of geothermal resources to reduce poverty through job development; veterans; residents who meet federal OEO poverty guidelines; local residents; and all other eligible individuals, associations and corporations.

Response

No action taken on the comment. The regulations now provide that the first qualified applicant shall receive a noncompetitive lease which is a statutory provision of the Act.

Section 3202.2-1(b)

Comment Bureau of Land Management, I-33; Western Geothermal Inc., I-547.

This paragraph states that an application to lease must show that the applicant is authorized to hold geothermal leases and must attach a certified copy of Articles of Incorporation. We do not believe there is any reason that Articles of Incorporation need be filed. Further, in the case of a corporation, a simple statement that the applicant is "X Company, a Nevada corporation" should suffice.

Response

The regulations as proposed have eliminated the requirement for filing a certified copy of articles of association or incorporation.

Section 3202.2-1(b)

Comment Bureau of Land Management, I-33.

This provision assumes that all parties associated together must have articles. This provision would be appropriately worded the same as 3102.3-1 including the exception (a). Under the wording of the act, joint applicants could qualify to file the same as in oil and gas. See Sec. 16 of the act.

Response

Regulations as proposed have been redrafted along lines suggested.

Section 3202.2-1(b)

Comment Bureau of Land Management, I-26; Standard Oil Co. of California, I-503.

The regulations should be expanded to require the corporate applicant to show the state in which it was incorporated and to disclose all stockholders holding more than 10% interest in the corporation. In addition, we think 3202.2-1(b)(1) and (2) should require "a copy of the corporate resolution" rather than "a statement".

Response

The regulations as proposed have been redrafted along the lines suggested, except that the 10% figure is now 20%.

Section 3202.2-1(c)

Comments City of Los Angeles, I-130.

A municipality's application and qualification for a geothermal lease should be the same as any corporation or person. A statement that it has been authorized to hold a geothermal lease in accordance with its governing laws, rules, or regulations should be sufficient.

Response

This suggestion has been adopted so as to make all applicants submit essentially the same statements or information.

Section 3202.2-1(c)

Comment Bureau of Land Management, I-33.

We suggest this heading be "governmental" units as "municipality" is too narrow. Also, the word "municipality" should be changed to "governmental" unit.

Response

Section 3202.2-2 has been redesignated as Section 3202.2-1(c). The regulations should be amended as suggested. (The current proposed rule making accommodates the suggestion. See Section 3202.2-1(c).)

Section 3202.2-3

Comment Bureau of Land Management, I-26.

Section 3202.2-4 is not complete in that it does not specify what is required of the attorney-in-fact nor the power of attorney granting his authority. We suggest that this regulation be revised and expanded similar to 43 CFR 3102.6-1.

Response

No action taken on comment. Regulations are considered adequate as proposed. Section 3202.2-4 has been redesignated Section 3202.2-3. (The current proposed rule making requires only a statement of the attorney-in-fact's authority, not evidence of same. See Section 3202.2-3.)

Section 3202.2-5

Comment Bureau of Land Management, I-26.

The requirements under 3202.2-5 appear to be incomplete. We recommend that a period should be inserted after "lease" on the seventh line and the words "and their qualifications to hold a lease" deleted.

Where the applicant is not the sole party in interest, separate statements must be signed by each of the parties and by the applicant setting forth the nature of the agreement between them. All interested parties must furnish evidence of their qualifications to hold such lease interest. These separate statements must be filed in the proper BLM office not later than 15 days after the filing of the application.

Response

No action taken on comment. The provisions of this suggestion should be adopted in final regulations. Section 3202.2-7 has been redesignated 3202.2-5. (Current proposed rule making accommodates the suggestion. See Section 3202.2-5.)

Section 3202.2-6

Comment Bureau of Land Management, I-33.

We suggest the addition of "and if the lease has issued, it shall be of no force and effect." As written, what is the result if the lease issues before actual notice of death?

Response

The regulations as proposed have been amended to delete Section 3202.2-6, "Death of applicant" and incorporates a section 3202.2-6, "Heirs and devisees (estates)" which accommodates the comment. Death of applicant does not defeat the application.

Section 3202.2-6

Comment Bureau of Land Management, I-26, I-33.

We did not find in the Act or in the proposed regulations where applications, nominations, or bids cannot be submitted by minors, although proposed regulation 3242.1-2(b) does prohibit approving an assignment to a minor. Further, since 3202.2-6 provides for the automatic termination of the application or nomination and the rejection of the bid if the applicant or nominator or successful bidder dies before the lease issues and there appears to be no objections to minors holding lease interests, we question the purpose of proposed regulation 3202.2-3 regarding guardians and trustees.

Nowhere in the proposed regulations are provisions made for the heirs of devisees of the deceased leaseholder to be recognized as the holder(s) of that lease. However, reference to such regulations is made under 3242.1-2(e).

Response

The regulations have been redrafted to delete section 3202.2-6 "Death of applicant" and substitute section 3202.2-6 "Heirs and devisees (estates)". This section now includes the suggestion. Section 3242.1-2(b) has been added to the regulations to provide that heirs or devisees of a deceased leaseholder are recognized as the holders of that lease. (Current proposed rule making requires that the citizen have reached the age of majority. The age of majority is determined by State law. See Section 3202.1(a).)

Section 3203.1-3

Comment Pacific Gas and Electric Company, I-410.

The maximum term of the lease appears very inflexible. The lease term should be related to generating units, or industrial plants if other usage develops, as they are completed.

Response

No action taken on comment. The lease terms were established by statute and cannot be changed through regulatory procedures.

Section 3203.1-3(b)

Comment Geothermal Resources International, I-640.

"This paragraph provides that there must be a bona fide sale of geothermal steam for delivery to a facility which must utilize the steam within 15 years from the date of commencement of the lease". This 15 year period should be increased markedly as the lease should be extended upon completion of a well capable of producing in commercial quantities.

Response

Section 6(d) of the Act so provides, amending legislation required to accommodate comment. Regulations paraphrase the Act.

Section 3203.1-5

Comment Union Oil Company, I-522.

This section should be clarified relating to (1) prior locations under the Act of 1872 (2) the lessee must have the right to produce and sell any locatable mineral, produced incidental to geothermal operations (3) in the event a location has not been filed prior to the issuance of a geothermal lease, the lessee should have a preemptive right to locate as against third parties during the term of the lease.

Response

No action taken on comment, Not authorized by Statute. Section 3203.1-6 has been redesignated section 3203.1-5. (Current proposed rule making designates provision as Section 3203.1-6, as originally published on July 23, 1971.)

Section 3203.1-5

Comment Standard Oil Company of California, I-503.

There are no substantive differences between this section and subsection (6)(e) of the Act, although the two are not entirely verbatim, and in the absence of a statutory change, any comments on the proposed regulations serves little purpose. However, for the record it would seem that there might be occasions when it would be both desirable and just for a lessee to obtain the rights granted by this section without having to relinquish his Geothermal Steam Lease.

Response

No action taken on comment. Statute provides for conversion of the geothermal lease to a mineral lease or a mining claim only after the lease is deemed incapable of further commercial production and utilization of geothermal steam. Hence, there is no justification for continuing the geothermal steam lease. Section 3203.1-6 has been redesignated section 3203.1-5. (Current proposed rule making designates provision as Section 3203.1-6 as originally published on July 23, 1971.)

Section 3203.1-5

Comment State of Nevada, I-580.

The regulations should cover multiple purpose development. Section 3203, which covers the leasing terms, specifically mentions geothermal steam, but does not include other geothermal resources specifically. In section 3203.1-6, no mention is made of conversion of geothermal leases where the valuable resource is geothermal heat, hot water, or perhaps demineralized water.

Response

No action taken on comment. Not authorized by statute. Section 3203.1-6 has been redesignated section 3203.1-5. (Current proposed rule making designates provision as Section 3203.1-6 originally published on July 31, 1971.)

Section 3203.2

Comment Standard Oil Company of California, I-503.

The words "or subdivisions" should be added to the first sentence of this section in order to bring it into conformity with section 7 of the Act, which it purports to implement.

Response

The regulations have adopted this suggestion.

Section 3203.2

Comment Bureau of Land Management, I-33; Getty Oil Company, I-325; Gulf Oil Company, I-343; Magna Power Company, I-373, I-384; Signal Oil and Gas Company, I-461; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Western Geothermal, Inc., I-547.

The Act makes no provision for minimum acreage in a lease. I would strongly recommend omitting the 1,280 acreage minimum and leave this to the Secretary's discretion at any time and from time to time, except that I would add a provision that as to lands embraced by preference rights claims, leases shall be structured so as not to exclude any such land from any lease to which such preference right claimant is entitled. Several comments proposed that the minimum acreage in a lease be reduced to 640 acres or 40 acres.

Response

Allowable minimum lease acreage should be consistent throughout regulations, Section 3203.2 should be amended to conform to section 3242.1-1, that is 640 acres. Regulations have adopted second portion of the comment. (Current proposed rule making provide for minimum size lease of 640 acres. See Section 3203.2.)

Section 3203.2

Comment Magma Power Company, I-384

The regulations should provide that with respect to leases issued pursuant to rights granted under Section 4 of the Geothermal Steam Act, the acreage embraced in any such leases shall be fixed by the Secretary so as to reasonably conform with the rights claimed under Section 4.

Response

No action taken on comment. The regulations provides the flexibility necessary to accommodate the comment.

Section 3203.3

Comment Signal Oil and Gas Company, I-461.

As written, this presumes and would seem to apply only in the case of two suggested minimum acreage leases.

Response

No action taken on this comment. Section 3203.2 of this regulation should be amended to allow a minimum lease acreage of 640 acres to conform to provisions of Section 3242.1-1. (Current proposed regulations permit a 640 acre minimum size lease. See Section 3203.2.)

Section 3203.4

Comment Bureau of Land Management, I-33; Standard Oil Company of California, I-503.

Section designated 3303.4 is an obvious typographical error and should be 3203.4

Response

This typographical error has been corrected.

Section 3203.4

Comment Bureau of Land Management, I-33.

Applications and "nominations." For the benefit of these regulations, the term "nominations" should be defined. This has caused considerable confusion, although it appears quite clear under 3212.

Response

No action taken on comment. The term "nominations" is considered self explanatory.

Section 3204.1

Comment Department of Agriculture, I-18; Bureau of Land Management, I-25, I-33.

Subpart 3204 of the proposed regulation, dealing with surface management requirements, would vest in the Supervisor of the Geological Survey the authority to restrict public access within lease areas; to prescribe measures for control of erosion and noise; to regulate waste disposal and restoration of disturbed lands; and to provide protection of wildlife habitat. As to National Forest System lands, authority in these matters is vested in appropriate Forest officers pursuant to delegations by the Secretary of Agriculture and the Chief, Forest Service.

We believe the regulations should either state that administration of surface resources is the responsibility of the land managing agency or should not explicitly state who will make decisions affecting surface resources. Under the latter alternative, the responsibilities of the Geological Survey and the land managing agencies could be defined by interdepartmental or interagency agreements.

Response

Comment adopted. Operational and surface management responsibilities established in section 3204.1.

Section 3204.1

Comment Magma Power Company, I-373.

The proposed regulations appear to contain the possibility of a conflict of authority and responsibility between the Supervisor under the proposed 30 CFR Part 270 and the other personnel of the BLM. Under the new Group 3200 of Title 43 CFR, the Secretary and the authorized officer have certain powers and responsibilities.

Response

The regulations have adopted the comment and define the areas of responsibilities.

Section 3204.1

Comment Sierra Club, I-702.

The second point regarding the proposed standards for operation is the setting of appropriate and exact standards for the control of visual impact, the control of noise, control of air pollution, control of

water pollution, and the adoption of effective means for their enforcement. We feel that the proposed regulations are deficient in this respect.

Response

No action taken on comment. Uniform standards established by regulations are not feasible as conditions will vary by individual sites. Lease terms and conditions will be developed on a case-by-case basis. Section 3204.1 sets forth the applicability of Federal, State and environmental laws and regulations.

Section 3204.1

Comment Imperial County California, I-634.

It would seem to me only proper that the county's general plan and zoning control should be extended to the land that you propose to lease. It follows that the terms, conditions and standards we have developed should also be applied no matter who the landlord might be.

That every lease require that a lessee shall comply with all the local rules, ordinances and regulations.

Response

The regulations provide for cooperation and consultation with State Agencies prior to leasing. As appropriate, compliance with local rules, ordinances and regulations will be incorporated into lease provisions and/or operating orders.

Section 3204.1

Comment State of California, I-648.

No clear position is taken on whether the state will have a hand in the actual regulation of exploration, drilling, maintenance, and abandonment operations on federal lands.

Response

No action taken on comment. Resources involved are under Federal jurisdiction and responsibility. States will have opportunity to assist in development of lease terms and conditions. The lessee shall conduct lease operations and maintenance in a manner consistent with Federal and State water quality standards and public health standards.

Section 3204.1

Comment Pacific Gas and Electric Company, I-626.

Where federal statutes have already established a regulatory procedure to control a particular environmental effect, regulations here proposed should not duplicate such regulatory controls. We urge that duplication be eliminated.

Response

No action taken on comment. Regulations require recognition and compliance with appropriate Federal and State statutes.

Section 3204.1(b)

Comment State of Colorado, I-89, I-90.

We heartily endorse the idea of providing for public access expressed here but feel that too much discretionary authority for closure is placed in the hands of the lessee. In our judgement, the lessee should only be permitted to recommend closures. The actual closure should be by authority of a responsible official of the land administering agency with the advice of the U.S. Geological Survey (USGS) Supervisor.

Response

Action taken on comment. Regulations now provide that restrictions on access will not be allowed without prior approval.

Section 3204.1(b)

Comment Bureau of Land Management, I-40.

Subparagraphs 3204.1(b) Public Access, (c)(4) Erosion Control, (c)(5) Noise Control, (d) Sanitation and Waste Disposal, (f) Wildlife and (g) Antiquities and Historical Sites all provide for control and administration by the "Supervisor" meaning a representative of the Secretary under the administrative direction of the Director, Geological Survey. I submit that these categories should fall into the province and jurisdiction of the Bureau of Land Management as the office holding direct management authority over the leased lands or lands subject to lease.

The subpart 3204 appears to be in direct conflict with subpart 3200.0-6(a) and (b).

Response

Action taken on comment. Regulations now define areas of responsibilities for land management agencies and Supervisor, U.S.G.S.

Section 3204.1(c)

Comment Trout Unlimited, Nevada Chapter, I-578.

The regulations should provide that from the standpoint of natural habitat there is every possible precaution taken not to involve thermal pollution of particularly cold water resources as they may exist.

Response

No action taken on comment. Regulations are considered adequate to protect all natural habitats.

Section 3204.1(c)

Comment Lake County Geothermal Control Council, I-367; Sierra Club, I-440; State of California, I-78, I-87; State of Oregon, I-121; City of Los Angeles, I-132.

Paragraph (c) on "Pollution Abatement". Pollution of surface water and ground water is prohibited in subparagraph (2), but such prohibition is insufficient in itself. What procedures are to be adopted for inspection and testing? Who is to inspect and test, and how frequently? To whom are residents in the area to address complaints if water pollution does take place? What jurisdiction, if any, do State, County and local agencies concerned with water quality have over waste water storage or disposal in operations which take place on Federal lands?

The same set of questions appertains with regard to air pollution.

With regard to erosion control as treated in subparagraph (4), a question arises as to conformity with other standards enforced within the area.

In subparagraph (5) it is stated that noise emissions from geothermal operations shall be controlled "as directed by the supervisor." This is wholly inadequate.

Response

Action taken on comment. Operations under a geothermal lease are supervised by the Supervisor, U.S.G.S., Section 3204.1 specifies the

responsibilities as to the action and the agency. Resources involved are under Federal jurisdiction and responsibility. All lessees have to comply with Federal and State pollution abatement standards. Local governmental agencies will have a voice in the preleasing analysis and determination of lease and permit terms and conditions. The regulations are considered adequate for the monitoring and control of all forms of pollution.

Section 3204.1(c)

Comment State of California, I-78, I-87; State of Nevada, I-580; State of Oregon, I-121.

If this arrangement is simply not possible, the federal regulations should, as an absolute minimum, require that all geothermal operations on federal lands conform to all state, county and local ordinances, conditions and regulations.

Response

Action taken on comment. Regulations now require that lessees shall comply with all Federal and State standards as to pollution abatement.

Section 3204.1(c)

Comment State of Colorado, I-89.

Part (c) of this subsection relates to Pollution Abatement. Subpart (1) provides the lessee can use pesticides and herbicides if federal rules are followed. This is too permissive.

Subpart (2) of this subsection relates to Water Pollution. In addition to adhering to existing federal and state water quality standards, as therein provided, some provision should be made to protect fish and fish habitat from thermal pollution and detrimental dissolved solids.

Response

Action taken on comment. The regulations now provide for additional environmental controls and standards. They are now considered adequate to monitor and control all forms of pollution.

Section 3204.1(c)

Comments City of Los Angeles, I-132.

We feel that detailed final plans of facilities designed to protect water quality should be submitted to the local agency responsible for water quality.

Response

Action taken on comment. The regulations provide for consultation with other interested parties and an evaluation of the potential impact on the environment by possible development and utilization of geothermal resources. The regulations are considered adequate to provide adequate participation by all concerned.

Section 3204.1(c)(2).

Comment Getty Oil Company, I-325; Magma Power Company, I-373; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Pacific Gas and Electric Company, I-410.

We would urge that this provision be clarified to authorize the lessee to inject excess geothermal fluids into any subsurface formation which does not contain potable water or which would not have the effect of contaminating any potable water source.

Response

Action taken on comment. Regulations now provide for reinjection of waste geothermal resources into geothermal or other suitable aquifers when approved by the Supervisor.

Section 3204.1(c)(4).

Comment Gulf Oil Company, I-343.

We suggest rewording this subsection as follows: "The lessee shall employ such reasonable soil and resource conservation and protection measures on the leased lands as the Supervisor determines are necessary."

Response

No action taken on comment. Each site may require different type of treatment to protect land, resource and environmental values. The Supervisor must determine what will be necessary. The reasonableness standard would give lessee no real additional protection as adequate protection measures must be taken.

Section 3204.1(f)

Comment Lake County Geothermal Control Council, I-367; Sierra Club, I-440; Pacific Gas and Electric Company, I-410.

Surface management requirements in this subsection 3204.1(e) are grossly inadequate concerning the problem of visual impact.

Subparagraph (e) on "Aesthetics" is indeterminate regarding policies, and precludes any standard approach to aesthetics or visual impact by leaving these matters in the hands of the individual supervisor or other authorized officer.

Response

No action taken on comment. Lessee is required to comply with all general and specific lease terms and conditions and any GRO Order issued pursuant to 30 CFR 270.11. Such terms and conditions will include appropriate surface management and aesthetic provisions. The Supervisor or Authorized Officer will, in their specific area of responsibility, assure compliance with general and specific lease terms and conditions.

Section 3204.1(f)

Comment Pacific Gas and Electric Company, I-410.

This paragraph specifies that aesthetics be taken "into account, in the planning, design, and construction of facilities on the leased premises."

This regulation conceivably would duplicate existing Department of the Interior (Bureau of Land Management) regulations (Title 43, Chapter II, Subchapter B, Part 2850).

Response

No action taken on comment. Regulations not considered duplication but considered necessary to assure adequate protection of the environment in all lease and permit terms.

Section 3204.1(g) and (h)

Comment State of Colorado, I-89; National Park Service, I-49.

We strenuously object to a USGS Supervisor, who is not a professional wildlife man, determining what measures are necessary to protect wildlife and wildlife habitat. Such determinations should be made by the Bureau of Sport Fisheries and Wildlife in cooperation with state wildlife agencies.

Response

No action taken on comment. The regulations provide for lease management responsibilities to be divided between the USGS and the land management agency. The Supervisor is responsible for matters within the area of operations. The appropriate land management agency has responsibility for the remaining lands in the lease. Coordination to obtain input assistance and advice from other resource agencies is a procedural matter subject to agreement between the involved Federal and State agencies.

Section 3204.1(h)

Comment National Park Service, I-49.

To assure input by the Advisory Council on Historic Preservation Subpart 3204.1(g) should be extended to include or add, "and such lease terms or instructions to comply with criteria of the Advisory Council on Historic Preservation under Section 106 of the National Historic Preservation Act of 1966 (80 Stat. 915) and Executive Order No. 11593 on the Protection and Enhancement of the Cultural Environment."

Response

No action taken on comment. It would not be practical to identify all interested parties in the regulations. The regulations are considered adequate to provide an input from all concerned parties.

Section 3204.3

Comment Magma Power Company, I-384; Bureau of Land Management, I-26; Standard Oil Company of California, I-503; Pacific Gas and Electric Company, I-422, I-626; Western Geothermal, Inc., I-547; City of Los Angeles, I-130.

Because of the various questions and problems that will undoubtedly arise in administering the Geothermal Steam Act, it is necessary that the Secretary enjoy a great deal of flexibility. Therefore, I suggest that there be added to the regulations a provision which creates a high level board, perhaps consisting of the Solicitor, the Director of BLM, and the Director of the Geological Survey, or their delegates, with the authority and power to consider and resolve special situations or claims of inequitable application of the regulations, environmental impact matters and perhaps agreements which may be entered into in conformity with the Solicitor's opinion M-36839 of October 28, 1971, if (as I think most desirable) the opinion is expanded to geothermal leases and operations. The provisions of Section 3204.3, although based upon the Act, will have to be so constructed so as not to permit forthwith termination of a lease or leases thereby depriving the utility company purchaser of geothermal steam of its fuel source.

The Act permits this resolution of a very real practical problem because it does not require termination under the circumstances set out in Section 3204.3.

The regulations should provide for review of the matter by the Secretary.

Response

Action taken on these comments. The regulations provide for continuous

operations until agreement of the readjusted terms and conditions are reached or the lease terminated under the provisions of section 3245.3. The regulations in section 3245.3 provide for notification of lessee by the authorized officer of the violation, a hearing if requested by the lessee, and an appeal on any decision finding that a violation exists. (Current proposed rule making require adjusted rental and royalty rates to be effective upon expiration of term being adjusted. See Section 3204.3(a)(2).)

Section 3204.3(a)(1)

Comment Lake County Geothermal Control Council, I-367, Sierra Club, I-440.

This section seems to indicate that readjustment of terms and conditions relating to any lease is possible no sooner than 10 years after steam production begins. This is far too long a period.

Response

No action taken on comment. The regulations paraphrase the law which establish the readjustment period as 10 years after steam production begins.

Section 3204.3(a)(1)

Comment Geothermal Resource International, I-640.

An ambiguity exists in the language; it could reasonably be interpreted that the authorized officer could set a schedule after 10 years whereby the terms and conditions could be readjusted on a semi-annual basis, or a monthly basis, or even, ad absurdum, a daily basis. The language needs cleaning up.

Response

No action taken on comment. The regulations paraphrase the statute.

Section 3204.3(a)(2)

Comment Geothermal Resource International, I-640.

"The authorized officer shall give notice to the lessee of any proposed readjustment of the terms and conditions of the lease and the nature thereof. The implications inherent within the foregoing language are so forbidding to the lessee that a prudent operator must decline to take such a lease.

Response

Action taken on comment. Regulations have been redrafted to provide for negotiating readjusted lease terms and for continuation of existing terms while negotiations continue. The adjusted terms are subject to review and appeal. (Current proposed rule making require adjusted rental and royalty terms rates to become effective upon expiration of term being adjusted. See Section 3204.3(a)(2).)

Section 3204.4

Comment Bureau of Land Management, I-26

Is geothermal steam reserved from all oil, gas, and helium produced from lands leased under the 1920 and 1947 leasing acts.

Response

No action taken on comment. Geothermal steam is reserved from all production obtained from lands leased under the 1920 and 1947 leasing acts.

Section 3204.5(b)

Comment Geothermal Resources International, I-640.

The language of the offset provision is quite obviously borrowed from the lexicon of oil and gas production, and at this nascent stage of understanding in regard to a geothermal reservoir and its behavior over a prolonged period, could lead to problems that we cannot even envision at present. By the most stringent interpretation the lessee could be seriously disadvantaged, inasmuch as he must supply the USGS with his plan of development and thereafter follow it. Should a well be drilled offsetting a remote corner of the lease, it is conceivable that the lessee would be compelled to either abandon his previously approved plan, or so seriously modify it so as to be injured economically. It must also be borne in mind that simply matching offset is insufficient to protect the lesser in a geothermal reservoir. The lessee must drill sufficient offset wells to supply a generating plant requiring as much as one million pounds of steam per hour. A great deal of additional thought should be given this section. Compulsory utilization is an immediate solution that comes to mind.

Response

No action taken on this comment. The regulations are considered adequate to protect the public interest and will not create undue hardship on a lessee.

Section 3204.6

Comment Magma Power Company, I-373.

I believe that notice to the surface owner is not sufficient. There ought to be consultation as well.

Response

No action taken on comment. The surface owner upon notification of proposed readjusted lease terms can protest against any adjusted term(s). This would result in full consideration of the protest and reasons therefore.

Section 3204.6

Comment Gulf Oil Company, I-343.

Section 3204.3 adequately sets forth standards for readjustment of terms and conditions authorized under Section 8 (a) of the act. We therefore suggest that Section 3204.6 should be deleted in its entirety.

Response

No action taken on comment. Regulations provide for two different circumstances and are considered necessary and adequate.

Section 3205.1-2(a)

Comment Magma Power Company, I-373.

Rentals as to non-producing leases should be paid to the office or authorized officer as designated by the Secretary from time to time. This will provide flexibility for the centralizing of management as more experience is gained in this field

Response

No action taken on comment. The regulations provide sufficient management flexibility. (Current proposed rule making does not accommodate this suggestion.)

Section 3205.2(b) and (c)

Comment Bureau of Land Management, I-26.

Are the service charges called for under 3205.2(b) and (c) non-refundable? These regulations are silent as to whether or not the service charge can be refunded.

Response

The comment was adopted. The regulations provide for a nonrefundable service charge.

Sections 3205.3-1 and 3205.3-1.

Comment Standard Oil Company of California, I-503; Getty Oil Company, I-325; Gulf Oil Company, I-343, I-353, I-359; Union Oil Company, I-522; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Washington Environmental Council, I-545; Geothermal Resources International, I-640.

The regulations refer to annual rentals of "not less than \$1.00 per acre or fraction thereof" which is the wording of the Act. The problems created by the failure of the regulations to specify the exact amount of annual rental per acre or fraction thereof are obvious, and it is requested that the two proposed sections be amended accordingly.

Response

No action taken on comment. The regulations provide flexibility for establishing advance rental requirements which are made a condition of each lease. This flexibility is considered necessary and desirable to help accomplish the purpose of the regulation which is to encourage orderly and timely development. Escalated rental rates would be established prior to lease issuance and could be evaluated by prospective lessees before funds are committed to obtaining a leasehold.

Section 3205.3-3

Comment Getty Oil Company, I-325; Gulf Oil Company, I-343, I-353, I-359.

It is our opinion that the provisions for escalated rental payments under proposed Section 3205.3-3 are burdensome and would deter exploration for and development of geothermal resources.

Response

No action taken on comment. The regulations provide flexibility for establishing advance rental requirements which are made a condition of each lease. This flexibility is considered necessary and desirable to help accomplish the purpose of the regulation which is to encourage orderly and timely development. Escalated rental rates would be established prior to lease issuance and could be evaluated by prospective lessees before funds are committed to obtaining a leasehold.

Section 3205.3-3

Comment Bureau of Land Management, I-25.

The regulations should be amended so that the rental rate could be increased so that the high cost of "doing nothing" would discourage longer term speculation, and encourage the lessee to develop the resources.

Response

The regulations were redrafted to provide that the rental will be set by the authorized officer as the amount of rental for the preceeding year plus an additional rental of \$1 per acre.

Section 3205.3-3

Comment Standard Oil Company of California, I-503.

The escalation rate should be not greater for the extended

than for the second five years of the primary term.

Response

The regulations were redrafted to adopt the comment.

Section 3205.3-3

Comment Gulf Oil Company, I-343.

The annual rentals during the 10-year primary term should be fixed at a maximum of \$1.00 per acre per year with the provision that if the lease should be further extended by drilling over the expiration date, the rental shall then become \$2.00 per acre per year for the duration of the extension provision.

Response

No action taken on comment. The regulations provide that the rental rate shall escalate at \$1 per year beginning with the sixth year and for each year thereafter until the lease year beginning on or after the commencement of production of geothermal resources in commercial quantities. The rental rates suggested in the comment would permit holding a lease for a long period of time without development which defeats the Departments goal of orderly and timely development of the resource.

Section 3205.3-5

Comment Magma Power Company, I-373, I-384; Standard Oil Company of California, I-503.

Regardless of the royalty initially fixed, the leases shall provide that if drilling operations under a lease are commenced within three years from the issuance date (or within four years from issuance date of the oldest lease if drilling operations are commenced under a unit plan or program) the initial royalty shall be ten percent. Royalty rates on competitive leases should be established on a case by case basis and published.

Response

The regulations now provide that the royalty rate should be set forth in the lease at not less than 10% and not more than 15% as set forth in the act. This provision provides flexibility to establish royalty rates commensurate with the anticipated value of the resource. Royalty rates for all leases will be made available to prospective lessees prior to lease issuance as in the published lease sale notice.

Section 3205.3-5

Comment Southern California Edison Company, I-470; Getty Oil Company, I-325; Southern Pacific Land Company, I-502.

It is recommended that the royalty figure be set at 10%.

Response

No action taken on the comment. Regulations paraphrase the provisions of the Act. This provision provides flexibility for establishing lease royalty rates consistent with the anticipated value of the resources.

Section 3205.3-5

Comment Union Oil Company, I-522.

The word "and" be inserted at the end of the second line. This would conform to the wording in the Geothermal Act of December 24, 1970.

Response

The regulations have been amended and eliminated the problem.

Section 3205.3-6

Comment Getty Oil Company, I-325; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Union Oil Company, I-522; Birchan Corporation, I-167.

We would recommend that the provisions of Section 3205.3-6 and 3243.1 be revised to provide that the effluent remaining after the generation of electrical power is not subject to an additional royalty unless it has been subjected to other special processing to demineralize it. We would also urge that the lessee's obligation to produce commercially demineralized water, as contemplated by Section 3205.3-6 be limited to situations where such water can be produced without waste of geothermal resources.

Response

The regulation has been amended to clarify that royalty payments will not be required on water if it is used in plant operations for cooling or in the generation of electric energy or otherwise. Royalty payments are only required on commercially demineralized water that has been sold or utilized by the lessee. This provision is required to assure proper conservation or utilization of the resources and has been retained as originally proposed. Also, the Act provides that the Secretary shall require substantial beneficial production or use thereof.

Section 3205.3-6

Comment Bureau of Land Management, I-26.

It appears that 3205.3-6 only reiterates 3205.3-5(b). (Won't the rate of royalty be specified in the lease for other by-products?)

Response

No action taken on this comment. The regulations are deemed necessary and desirable to conform with section 5 (b) and 9 of the Act.

Section 3205.3-7

Comment Bureau of Land Management, I-26.

We suggest that 3205.3-7 be amended to specify that a waiver, suspension or reduction of rental or royalty applies only to producing leases. Will the granting of such waiver, suspension or reduction affect extension for production of geothermal resource in commercial quantities?

Response

No action taken on the comment. Section 11 of the Act provides in part that the Secretary may in the interest of conservation suspend operations on any lease, that he may extend the lease term for the period of any suspension, and that he may waive, suspend, or reduce the rental or royalty required in such lease.

Section 3205.3-8(d)

Comment Gulf Oil Company, I-353.

Wherever the term "royalty" is used it should be changed to read "minimum royalty" and that where the context now requires payment of rental and royalty it should be changed to provide for the payment of rental "or" (minimum) royalty. It would also be advisable to provide that any minimum royalties payable hereunder shall be in the same amount per acre as the last rental rate was payable under the lease.

Response

The regulations were redrafted to require rental or royalty payments. The regulations should be redrafted to read "minimum royalty" wherever the regulations now read "royalty." The regulations were redrafted to provide flexibility in establishing minimum royalty lease terms. (Current proposed rule making accommodates the minimum royalty suggestion. See Section 3205.3-8(d).)

Section 3205.3-9

Comment Geothermal Resources International, I-640.

The rentals and royalties of any geothermal lease may be readjusted at not less than 20-year intervals beginning 35 years after the date geothermal steam is produced as determined by the supervisor. The 60-day termination provision is too absolute and our comments set forth on Section 3204.3(a)(2) are applicable in this instance as well.

Response

The regulations were redrafted to provide that all proposed readjusted terms are subject to renegotiations. New provisions for terminating leases are found in Section 3245.3 of these regulations. (Current proposed rule making require adjusted rental and royalty rates to become effective upon expiration of term being adjusted. See Section 3205.3-9. Provisions for terminating leases are found in Section 3244.3 of current proposed rule making.)

Section 3205.3-9

Comment Standard Oil Company of California, I-503.

Section 8(b) of the Act, which this proposed regulation is intended to implement, provides that if a lessee does not file objections, or relinquish his lease within 30 days of notice of the readjustment of the rental and royalty terms, he shall be deemed to have accepted the said terms. The penultimate sentence of the proposed regulation omits the reference to the filing of objections and should be amended accordingly, in order to comply with the terms of the Act.

Response

The regulations were redrafted to accommodate this comment.

Section 3206.1-1

Comment Lake County Geothermal Control Council, I-367; Sierra Club, I-436, I-440, I-702.

3206.1-1 Types of Bonds -- A \$5000 bond for the protection of persons and property under paragraph (6) is grossly insufficient.

Response

Action taken on comment. The regulations now provide flexibility for establishing the amount of the protection bond as not less than \$5000. The authorized officer after determining the potential impact of resource development can set the bond requirement as needed and justified.

Section 3206.1-1(a)

Comment Bureau of Land Management, I-33.

3206.1-1(a). It is suggested that the bonds required, at least as to noncompetitive leases, could be required "prior to drilling" and "prior to entry" rather than prior to the issuance of a lease.

Response

No action taken on comment. Submission of bond prior to lease issuance is considered necessary to assure compliance with all the terms and conditions of the lease, especially advanced rental payments.

Section 3206.1-1(b)

Comment Bureau of Land Management, I-33.

It should be made clear whether this is an additional bond over that mentioned in 3206.1-1(a). This should also be a corporate surety bond and so expressed by adding the words "corporate surety" between the words "a" and "bond".

Response

No action taken on comment. Regulations considered adequate as proposed. (Current proposed rule making accommodates this suggestion. See Section 3206.1-1 (b).)

Section 3206.3

Comment Bureau of Land Management, I-33.

3206.3. \$5,000 bond for indemnification for damages should be required of an operator as well as of a lessee as a separate bond in the same manner as it is assumed is contemplated by 3206.1-1(b). A provision that this may be done in lieu of a lease in a manner similar to that provided in 3104.2-1 when a nationwide bond is not filed is suggested.

Response

No action taken on comment. The regulations require, if appropriate, the operator to furnish both bonds and require adequate bonding provisions in an amount prescribed by the Supervisor.

Section 3206.6

Comment State of California, I-78.

Section 3206.6 Statewide Bond

Federal government should have no interest in state boundaries. Two adjacent states may have widely differing amounts of geothermal potential (e.g., Nevada and Utah, 344,027 acres vs. 13,521 acres) and to impose a requirement for \$50,000 bonds in both cases would be grossly unfair.

Response

No action taken on comment. The regulations require a statewide bond to be furnished applicable to the State in which the leases are situated. Separate Statewide bonds are required due to legal differences between States.

Section 3206.6

Comment Bureau of Land Management, I-33.

3206.0. Should be corrected to read 3206.6.

Response

Action taken on comment. The regulations have been amended to correct this improperly designated section.

Section 3206.8

Comment Bureau of Land Management, I-33.

We suggest that "appropriate land office" should read "proper BLM office".

Response

Action taken on comment. The regulations have been amended, wherever appropriate, to read "proper BLM office".

Section 3210.1

Comment Magma Power Company, I-373; Gulf Oil Company, I-343, I-353, I-359.

The regulations should specifically provide that they are effective from and after the effective date of the Act.

Response

The regulations were redrafted and redesignated. Subpart 3210 and 3211 were consolidated into subpart 3210. Sections 3210.1 and 3220.1 specifically provide that lands and deposits subject to disposition under these regulations will be available for leasing after or on the effective date of these regulations respectively. Therefore, application filed prior to the effective date of the regulations will be rejected administratively.

Section 3210.1

Comment American Public Power Association, I-160; Occidental Petroleum Company, I-398; American Thermal Resources, Inc., I-567.

Section 3211.1 is inconsistent with Section 4 of Public Law 91-581 and prejudices the rights of applicants for Non-Competitive Geothermal Leases filed prior to the effective date of the regulations.

Section 3211.1 of the proposed Federal Registers, as it is now written, penalizes the applicant who has expended time and money, culminating in the timely filing of a non-competitive application, only to have it rejected by a regulation contradictory to the act creating it.

All applicants should be required to fully comply with subparts 3205.2(b) and 3211.2 within 30 days after the effective date of these regulations.

Response

Section 3211.1 has been redesignated Section 3210.1. No action taken on comment. The regulations, as proposed, provide all interested parties participation on an equitable basis, and the opportunity to submit, at the time of filing, a complete application.

Section 3210.1

Comment Standard Oil Company of California, I-503.

The first sentence of this section provides that lands which are not within a KGRA will be available for leasing on the 30th day after the effective date of the regulations while the second sentence states that all applications for the same lands (not within a KGRA) which are filed between the effective date of the regulations and 30 days thereafter shall be considered to have been filed simultaneously. This is not only ambiguous but also does not indicate what disposition will be made of applications which may have been filed prior to the approval of the regulations.

Response

The regulations have been redrafted to eliminate the problem. Section 3211.1 has been redesignated as section 3210.1. Consideration will be given to modifying the regulations to expressly dispose of premature applications (those filed before the effective date of the regulations) as unacceptable. (Current proposed rule making accommodates the suggestion. See Section 3210.1(a) concerning applications filed before effective date of regulations. See Section 3210.2-2 concerning simultaneous filing periods for receiving applications to lease.)

Section 3210.1

Comment Gilmore and Gilmore, I-600; Geothermal Resources International, I-640; American Thermal Resources, Inc., I-160, I-162, I-163.

Applications filed prior to the effective date of the regulations should be considered as a simultaneous filing if duplications exist; such applications should be considered as valid if no duplications exist.

Response

No action taken on comment. The regulations have been redrafted to more clearly state that lands are first available for leasing after the effective date of the regulations. This provision is deemed necessary to provide equal participation by all interested parties. Section 3211.1 has been redesignated as section 3210.1. Consideration will be given to modifying the regulations to expressly dispose of premature applications (those filed before the effective date of the regulations) as unacceptable. (Current proposed rule making proposes to reject all applications filed prior to the effective date of the regulations. See Section 3210.1(a).)

Section 3210.2-1

Comment State of Oregon, I-120; Getty Oil Company, I-325; Groh, Edward A., I-342; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Standard Oil Company of California, I-503; Union Oil Company, I-522, I-526, I-557; Western Geothermal, Inc., I-547.

The requirement that an exploration and development plan accompany an application is one which will be difficult to comply with entirely, as it calls for certain factual information and details, most of which can be determined only after exploration has been completed and the quality and volume of Geothermal Resources and recoverable by-products have been determined. Instead of discouraging the filing of applications by imposing such an onerous burden upon each applicant, it would seem more practical to require an applicant who has obtained priority, to furnish a satisfactory exploration plan as a condition precedent to the issuance of a lease and to require a development plan only when a discovery of Geothermal Resources in commercial quantities has been made.

Response

The regulations have accepted the comments in part. The regulations no longer require a development plan. Section 3211.1 has been redesignated as section 3210.1. (Current proposed rule making would require the filing of the development plan before a lease is issued. Sec. 3210.2-1(d).

Section 3210.2-1 and 3220.2

Comment

Gulf Oil Company, I-343; Southern California Edison Company, I-470; Southern Pacific Land Company, I-502.
Magma Power Co., I-384; Pacific Gas and Electric Co., I-410

A prescribed lease application or nomination form should be adopted in order to avoid any question of whether the applicant complied with all of the Secretary's requirements. This is necessary in order to avoid possible litigation by an unsuccessful applicant who alleges that the successful applicant did not comply with the Secretary's requirements.

Response

No action taken on comment. A standard form may be adopted at a later date. Section 3211.2 has been redesignated as Section 3210.2-1. (Current proposed rule making will provide a lease application form. See. Section 3210.2-1.)

Section 3210.2-1(d)

Comment

Pacific Gas and Electric Company, I-410

The term "pollution of surface and ground water" should be deleted from the regulation.

Response

No action taken on comment. This provision is considered necessary to assure that the applicant has considered: (1) the effect of his proposed leasing activity on surface and ground water resources, and (2) what action he contemplates to protect these resources. With this and other data the authorized officer will be able to evaluate the proposed leasing program and prepare adequate lease terms and conditions prior to leasing. Section 3211.2 has been redesignated as Section 3210.2-1.

Section 3210.2-1(d)

Comment Gulf Oil Company, I-343, I-353, I-359

Subsection (d) should be deleted in its entirety and replaced, on the form previously suggested, with a statement---that the applicant will comply with all valid and applicable rules and regulations as described in Section 3204.1.

Response

Partial action taken on comment. This provision is required to enable the authorized officer to prepare appropriate stipulation for the conservation of the resources and protection of the environment. Section 3211.2 has been redesignated as Section 3210.2-1.

Section 3210.2-2

Comment Bureau of Land Management, I-26.

If an applicant or nominator withdraws his application or nomination or if his application or nomination to lease is rejected, must the lands concerned be posted again before becoming available or are the lands open to over-the-counter filings? The proposed regulations are silent on this point.

Response

No action taken on comment. The lands are: (1) open to over-the-counter filing after notation of the records, (2) subject to the discretionary authority of the authorized officer and (3) subject to the provisions of these regulations. Section 3210.1-1 has been redesignated section 3210.2-2. Consideration should be given to making these regulations similar to those under the simultaneous oil and gas leasing provision in Subpart 3112, Section 3210.1-1. (Current proposed rule making redesignates provision as Section 3210.2-3.)

Section 3210.2-3

Comment Geothermal Resources International, I-640.

Why should land originally excepted from an application, be automatically included in a lease in the event such excepted land might later become available? Lessee should have the option to acquire these lands, but not the obligation.

Response

No action taken on the comment. Provision allows for compliance with applicant's original offer and retains the priority of his application as to the omitted lands. Applicant has option to withdraw his application as to the omitted lands at any time prior to the original lease being amended to include the omitted lands. Section 3210.1-2 has been redesignated as section 3210.2-3. Consideration should be given to amending the regulations by adding the sentence "the rental and the lease terms for the land added by such an amendment should be the same as if the land has been included in the original lease when it was issued". (Current proposed rule making adds the quoted language. See Section 3210.2-4.)

Section 3210.3

Comment Gulf Oil Company, I-343.

Whenever the cancellation of a lease to correct an administrative mistake occurs there should be a coincident repayment of advance rentals. Therefore, the second sentence of Section 3210.1-3 should be amended by adding ". . . and the advance rental returned, . . ." after the words ". . . it shall be cancelled . . .".

Response

Action taken on comment. Regulations now provide that the advance rentals will be returned in such a circumstance. Section 3210.1-3 has been redesignated section 3210.3.

Section 3210.3

Comment Bureau of Land Management, I-26; Gulf Oil Company, I-343;
Union Oil Company, I-522.

The words "display a competitive interest and to" on the 17th & 18th lines of this section should be deleted. The term "competitive interest" as used in 3000.0-5(d) automatically would cause these lands to be classified as K.G.R.A.

Response

The regulations as redrafted have adopted the comment. Section 3210.1-3 has been redesignated as Section 3210.3.

Section 3210.3

Comment Bureau of Land Management, I-26; Gulf Oil Company, I-343.

The portion of the proposed regulation dealing with simultaneous offers or nominations does not prohibit multiple filings by a single party or corporation. This appears to be an oversight. Some regulation comparable with 43 CFR 3112.5-2 should be inserted in the proposed regulations.

Response

No action taken on comment. The regulations should be modified to prevent multiple filings or nominations for the same land or parcels or tracts of land. Sections 3211.2 and 3212.4 have been redesignated as sections 3210.2-1 and 3211.2 respectively. (Current proposed rule making implies this under Section 3210.2-2 and 3200.0-5(k).)

Section 3210.3

Comment Standard Oil Company of California, I-503; Union Oil Company, I-522

The proposed regulations provides that multiple applications received the same day are deemed to display a competitive interest and to have been filed simultaneously. This provision should be deleted.

Response

Action taken on comment. The regulation has been redrafted to reflect that multiple applications do not per se denote competitive interest. Section 3210.1-3 has been redesignated as Section 3210.3. (Current proposed rule making would provide that where applications overlap by 50 percent, competitive interest is demonstrated provided the applications overlapping were filed during a simultaneous filing period. See Section 3200.0-5(k).)

Section 3210.4

Comment State of California, I-78, I-87; Birchan Corporation, I-167; Crego, William O., I-277; American Thermal Resources, Inc., I-160, I-162, I-163.

It is recommended that Section 3210.1-4 be voided and replaced with the following:

The classification of a lease or area as "non-competitive" may not be changed after the date a properly filed application for a lease or an exploration permit is received by the appropriate BLM officer. Reclassification may occur only at such time as the lease or area is dropped or for some other reason again becomes available for reissue by BLM. Commentor is concerned that an all-competitive system will be developed.

Response

No action taken on comment. Provisions suggested by comment are not authorized by law. Section 3210.1-4 has been redesignated as Section 3210.4.

Section 3211.1

Comment Bureau of Land Management, I-33.

State office should read proper BLM office.

Response

Action taken on comment. The regulations now reflect the wording suggested in the comment. Section 3212.1 has been redesignated section 3211.1.

Section 3211.1

Comment Standard Oil Company of California, I-503.

The regulations do not provide for adequate identification of leasing units included in the call for nominations which is to be posted "from time to time." Also, the length of the nominating period is discretionary with the authorized officer and conceivably could be as short as one day or as long as six months. Also the proposed regulations do not provide for postings at regular intervals; they should provide for nominating periods of sufficient length to permit adequate consideration of the lands.

Response

The regulations as proposed have redesignated section 3212.1 as section 3211.1. The non-competitive leasing regulations have been restructured to provide logical sequential regulations for this leasing program. The time schedule for calling for nominations will be determined by each authorized officer and will depend on the number of tracts available, public demand, and the need for resource. Administrative flexibility is a desirable and necessary provision of the regulations.

Section 3211.1

Comment Bureau of Land Management, I-26.

The regulations should be amended to specifically require that lands formerly within leases that have been canceled, have expired, been relinquished or terminated, be posted before an application may be filed for such lands. The way the regulation now reads such posting does not appear to be mandatory.

Response

No action taken on comment. Consideration should be given to the comment to require mandatory posting. The regulations now infer that posting is required. (Current proposed rule making implies the suggestion made. See Section 3211.1(a) and (b).)

Section 3211.1 and 3220.2

Comment Western Geothermal, Inc., I-547.

Throughout the proposed rule making reference is made to "nominations" and "nominators". These seem to be used in a different sense than "lease application" or "lessee". We can nowhere find a statement of what a nomination is or how it differs from a straight application and we are most confused by the reference to such items. The words should either be eliminated or clarified.

Response

No action taken on the comment. Terms and usage are believed self-explanatory.

Section 3211.2

Comment Getty Oil Company, I-325.

In connection with the leasing of lands which have been previously leased and subsequently become available for re-leasing, the suggested nomination procedures provided for by proposed Sections 3212.1 to 3212.4 would not seem to be necessary.. Instead use the arrangement as set forth in Section 3112 of Title 43. A corresponding procedure would be preferable to the nomination process proposed by the regulations.

Response

No action taken on comment. Procedures established by the regulations as proposed provide the management flexibility and public participation needed to properly manage the resource. Sections 3212.1 through 3212.4 have been redesignated as Section 3211.1 through 3211.4. (Current proposed rule making has generally accommodated the suggestion. Nominations are no longer required. Applications similar to Section 3112 procedures would be required. See Section 3211.1 and 2.)

Section 3211.2

Comment Standard Oil Company of California, I-503.

Complications would be eliminated if a lease nominator, who is in effect a lease applicant, were required to furnish the same showing of qualifications with his nomination that subpart 3211.2 requires . a lease applicant to furnish with his application. This could be accomplished by amending proposed subparts 3212.2 and 3212.4.

Response

Action taken on comment. The publication required by the regulations will set forth the requirements for a complete nomination. Sections 3211.2, 3212.2 and 3212.4 have been redesignated as Sections 3210.2-1, 3211.3 and 3211.2 respectively.

Section 3211.3

Comment Bureau of Land Management, I-26.

What is the "prescribed period" referred to in 3212.2?

Response

The prescribed period is that period established by the authorized officer in the published notice required by Section 3211.1.

Section 3220.3

Comment Bureau of Land Management, I-26.

This regulation seems inadequate. It should specify "in a newspaper of general circulation in the area in which the lands or deposits are located."

Response

Action taken on comment. The regulations now provide provisions requiring that the notice be published in a newspaper of general circulation in the area in which the lands to be leased are located. They also now provide flexible provisions as to the number of times the notice must be published.

Section 3220.5

Comment Standard Oil Company of California, I-503.

This proposed regulation does not require a competitive lease bidder to furnish the same information that is required of a noncompetitive lease applicant under subpart 3211.2. We believe that this is an oversight which could be remedied by the amendment of the second sentence of 3220.5 (a) to read as follows: Each bidder must submit with his bid a certified or cashier's check...with the information required of a noncompetitive lease applicant by 3211.2."

Response

No action taken on comment. The regulations retain the provision as proposed which provide for the notice of lease sale, section 3220.4, to set forth those data required to be submitted with each bid. This data should include the information required by section 3210.2-1 (d). This data will be required only from the successful bidder.

Section 3220.5: 3220.6

Comment Geothermal Resources International, I-640.

All bidding should be open bidding, and not sealed bidding, only.

Response

No action taken on comment. Sealed bidding is conducive to obtaining fair market value for the resource which is one of the Department's resource management responsibilities.

Section 3220.6

Comment Gulf Oil Company, I-343.

The second portion of this second sentence could safely be deleted in either case or, better, that the entire second sentence should be deleted.

Response

No action taken on comment. Consideration should be given to deleting the exception portion of the second sentence. (Current proposed rule making has deleted the exception portion of sentence. Section 3220.6(a).)

Section 3220.6

Comment Gulf Oil Company, I-343.

A paragraph should be inserted just prior to the last sentence of 3220.6 to provide as follows: "If the party selected as the high bidder fails to execute the lease or otherwise comply with applicable regulations, the authorized officer may, between 30 and 60 days after the date on which the bids are opened, accept the second highest responsible qualified bidder."

Response

No action taken on comment. This comment was rejected since the second highest bid may be totally inadequate and might not reflect the fair market value of the resource.

Section 3230.1

Comment Center for Law and Social Policy, I-192.

Subsections 1,2,4 and 5 should be eliminated since the Act clearly spells out these provisions.

Response

No action taken on this comment. Consideration should be given to eliminating Subpart 3230, and all references thereto, from these regulations. It is believed the few conversion right lease applications filed pursuant to the Act can be adjudicated properly without the benefit of regulations. (Current proposed rule making retains this subpart.)

Section 3230.1-1

Comment Magma Power Company, I-373, 384; Bureau of Land Management, I-33.

In Section 3230.1-1 the word "valid" is inserted in the phrase "or subject to valid existing mining claims," although the Act contains no such word. The Act reads "or (subject) to existing mining claims."

Response

Action taken on comment. The regulations now eliminate the term "valid".

Section 3230.1-5

Comment Magma Power Company, I-373, I-384; American Thermal Resources, Inc., I-160, I-567, I-162, I-163; Signal Oil and Gas Company, I-461; Representative-Craig Hosmer, I-3; American Public Power Association, I-160.

The words "prior to September 7, 1965" are inserted in relation to expenditures made, although the Act contains no such provision. The Act provides that expenditures "have been made" by applicant. This provision should be eliminated from the regulations.

Response

Action taken on comment. The regulations have been revised to eliminate this provision.

Section 3230.1-5

Comment Bureau of Land Management, I-33.

This section should be expanded and clarified. What in general constitutes "substantial expenditures" as contemplated by the Act? It is suggested that the completion of one exploration well or a complete geophysical survey of a value of not less than \$15,000 is substantial.

Response

No action taken on comment. Each application under the "grandfather" provision of the Act will be evaluated separately and on the merits of the application. Therefore, specific criteria does not have to be established by the regulations.

Section 3230.1-6(a)(i)

Comment Magma Power Company, I-373.

In Section 3230.1-6(a)(i) it is provided that the owner of conversion rights shall be entitled to issuance of a competitive lease only in accordance with the provisions of subparagraph (2). The word "only" is too restrictive. Flexibility for the Administrator should be provided.

Response

No action taken on comment. The regulations have retained the term "only." The Act specifically states that lands within a KGRA shall be leased only by competitive bidding. (Current proposed rule making has extensively revised this Section 3230.1-6.)

Section 3230.1-7

Comment Bureau of Land Management, I-33.

This provision should reflect that there is no minimum acreage limitation for conversion right leases.

Response

Partial action taken on comment. Section 3203.2, rather than Section 3230.1-7, provides the discretion necessary to accommodate this comment.

Section 3230.3-1

Comment Magma Power Company, I-373.

The Act neither provides for nor authorizes the requirement of an application for right to convert. This provision should be eliminated.

Response

No action taken on comment. The regulations have retained the provisions for filing applications by conversion right claimants. The Act provides that these rights shall be determined in accordance with regulations prescribed by the Secretary. Consideration should be given to deleting part 3230 and all reference to part 3230 from these regulations as each conversion right will be considered on its merits consistent with the provisions of the Act. There is no reason why specific regulations, which paraphrase the Act in most cases, are needed to adjudicate only a few such rights. Any administrative determination made or decision issued is appealable whether it be authorized by regulation or statute. (Current proposed rule making retains this subpart.)

Section 3230.3-1, 3230.3-2, 3205.2

Comment Bureau of Land Management, I-33.

The regulations should be clarified as to whether "applicants," pursuant to F.R. publication of January 15, 1971, are to be required to pay a filing fee of \$50 as a service charge and \$1 per acre advance rent.

Response

Partial action taken on the comment. The applicant for a conversion right lease is not required to file a service charge but will be required, as a prerequisite to obtaining a lease, to submit upon notice, his advance rental payment prior to conversion lease issuance.

Section 3230.3-1

Comment Magma Power Company, I-373.

This section should be redrafted so as to allow 60 days from the effective date of these regulations, in which to file conversion right applications.

Response

No action taken on the comment. The Act specifically limits filing of conversion right applications, to the six-month period subsequent to the enactment of the law. No authority to accommodate the comment.

Section 3230.3-2 (b)

Comment Bureau of Land Management, I-33.

Since the area of a mining claim on which a conversion right may be predicated may be less than a legal subdivision in size and/or lie other than in accord with surveys or protraction lines, and since it appears that a preference right may only extend to the limits of such claim, it seems appropriate that a provision should be made in this section for describing the land applied for in terms of the claim boundaries, irrespective of whether the land has been surveyed or protracted.

Response

Partial Action taken on comment. The regulations, sections 3230.1-7 and 3230.3-2 (b), provide for leasing only that land included in a lease, permit, application or claim and also provide for metes and bounds surveys where appropriate. Consideration should be given to authorize conformation of a metes and bounds land description (mining claim) to the closest aliquot lot, tract or subdivision. Where the lands have not been surveyed or protracted **surveys prepared, the government should prepare protracted surveys** from which lands to be included in a conversion right lease would be described. (Current proposed rule making accommodates this suggestion. See Section 3230.1-7.)

Section 3230.3-2 (C)(4)

Comment Magma Power Company, I-373.

The regulations require the filing of a map. Suggest that this requirement be modified so that the filing of a map be requested where preparation of such a map is reasonably possible and would aid in determination of expenditures, etc.

Response

No action taken on comment. The regulations retain the provision requiring that a map be submitted. The purpose of this map is to provide the authorized officer information needed to support the record and whatever decision is made. Map need not be elaborate, only informative. It is a reasonable requirement.

Section 3230.4

Comment

Magma Power Company, I-384 and I-373.

This regulation provides that the authorized officer will make a determination as to whether or not a preference right claimant has made an adequate showing. There should be added to this section a provision that the authorized officer, prior to making his determination, shall advise the claimant of his tentative finding and shall give the claimant the right, if he desires, to have a hearing on the claim for preference rights prior to the determination with respect thereto by the authorized officer.

Response

No action taken on comment. The regulations do not specifically provide for procedure matters. Procedural matters are set forth in approved manual releases. All decisions formulated by the Secretary or the authorized officer are subject to the provisions of Group 1800, Chapter II of Title 43, Code of Federal Regulations, which provide for appeals and such hearings as are necessary and/or requested. **Section 3000.4 of these regulations also provide for appeals and contests.**

Section 3241

Comment Bureau of Land Management, I-26.

The proposed regulations under Subpart 3203 show the primary term of the geothermal steam lease to be ten years and it provides for means of extension beyond that period, i.e., for production, for drilling over the expiration date, for production of by-products when geothermal steam production has ceased and extension for a period of suspension. Nowhere do these regulations or the act provide for extension by mere application. However, the regulations under Subpart 3241 imply that extension may be made by application alone. 3241.5 further implies that even if production is had on the leasehold, the lease will expire at the end of its primary term (10 years) without a timely filed application for extension. It appears that the regulations under Subpart 3241 are inapplicable and should be deleted.

Response

No action taken on comment. Regulation spells out conditions for extension. Imposes additional requirement to apply for extension so that the records will show that lands are not available for new leasing. (Current proposed rule making deleted this entire subpart on lease extensions, continuation, or renewal as unnecessary.)

Section 3241.2

Comment Signal Oil and Gas Company, I-461.

The phrase "Within 90 days before the expiration of the Lease" needs clarification.

Response

Action taken on comment. The regulations were clarified to provide that applications must be filed during the 90 day period prior to the expiration date of the lease which specifies when the 90 day period runs. (See comment under Section 3241.)

Section 3241.2

Comment Bureau of Land Management, I-33.

The regulations should indicate where the application is filed.

Response

No action taken on comment. Consideration should be given to amend the regulations to specify where the application must be filed. (See comment under Section 3241.)

Section 3241.3

Comment Bureau of Land Management, I-33.

Segregation from what, should be made clear in the regulation. It is suggested that this may be done by adding the following: Prior to such notation, the lands are not available for the filing of geothermal lease offers. Offers filed prior to such notations will confer no rights in the offeror and the offer will be rejected. See 3107.1-4.

Response

Partial action taken on comment. The regulations have been amended to specify what an application for extension segregates the lands from. Consideration should be given to specify what administrative action will be taken on noncompetitive lease applications filed prior to or subsequent to notation of the records. (See comment under Section 3241.)

Section 3241.5

Comment Bureau of Land Management, I-26.

The last sentence under 3241.5 would be more clear if "these regulations" were changed to "3212.1."

Response

No action taken on this comment. The regulations as drafted are considered adequate. (See comment under Section 3241.)

Section 3242.1-1 (Current proposed rule making redesignates
as Subpart 3241.)

Comment Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Magma Power Company, I-373; Signal Oil and Gas Company, I-461.

Limiting the assignment of leases to more than 640 acres is too restrictive. The minimum assignment of a lease should be reduced from 640 acres to as small as 10 acres. The 10-acre limit is suggested because a 50 MW commercial generating facility could be placed within such an area. A 50 MW facility is about as small a facility as is economically feasible.

Response

Partial action taken on the comment. The regulations retain the 640 acre minimum assignment provision except a provision was added whereby the Secretary has discretion to reduce the minimum acreage in the interest of conservation of the resources. Generally, assignments of less than 640 acres impedes timely and orderly development and creates time consuming burden to block up a development unit. Special permits will be issued for power generating plants and will provide acreage needed to accommodate such a facility. (Current proposed rule making has modified section to place limitations on undivided interest assignments. See Section 3241.1-1.)

Section 3242.1-1 (a)(2)

Comment Magma Power Company, I-373.

The regulations should except from the limitations any overriding royalty.

Response

No action taken on the comment. The regulation applies only to record title assignments which do not include overriding royalty interests.

Section 3242.1-2 (a)

Comment Bureau of Land Management, I-26.

Reference is made to 3202.4-1 which is nonexistent. Should it be changed to 3211.2 (e)?

Response

Action taken on comment. The regulations have been amended to site the correct reference Section 3202.2-1(a).

Section 3242.1-2 (b)

Comment Bureau of Land Management, I-33.

While assignments to minors would not be appropriate, it appears that assignments to legal guardians or trustees of minors would be. The regulations should provide for issuance of a lease where guardians, trustees, administrators, executors, etc., may legally act on their (minors) behalf.

Response

Action taken on comment. The regulations now provide that only assignments to minors who are heirs or devisee of a lessee will be approved.

Section 3242.3

Comment Gulf Oil Company, I-343.

The word "principal" should be substituted for "principle."

Response

Action taken on the comment. Correction has been made.

Section 3242.7-1

Comment Geothermal Resources International, I-640.

All assignments of overriding royalty must be given a formal approval. This provision is considered particularly oppressive.

Response

No action taken on comment. The provision was missread. Regulation provides that overriding royalty interests will not receive formal approval.

Section 3242.7-2 (a)

Comment Geothermal Resources International, I-640.

The United States should have no concern on the amount of an overriding royalty share provided such amount does not render an operation uneconomic. Any overriding royalty share that so encumbers a lease must reasonably be reduced to the point where the lease is economic.

Response

No action taken on comment. The provision was retained to limit the number of parties of interest whereby the management and conservation of the resource could be maximized more efficiently.

Section 3242.8

Comment Magma Power Company, I-373.

The provision for forthwith termination is extremely harsh. The regulations should provide for notice and thirty days within which to remedy a default.

Response

No action taken on comment. The regulation provides that the lessee must bear the burden of avoiding default. Also, the regulations provide that the lease shall be subject to termination, which allows for discretion by the authorized officer. Termination requirements provide for notice to the lessee which notice must allow a 30 day compliance period.

Section 3243.1 (Current proposed rule making redesignates
Subpart as 3242.)

Comment Southern California Edison Company, I-470; Southern Pacific Land Company, I-502; Standard Oil Company of California, I-503; Signal Oil and Gas Company, I-461; Office of Saline Water, I-57.

The primary problem with this section is that it does not restrict the authorized officer from requiring the production of demineralized water. Such production would result in an undue waste of geothermal energy. Suggest redrafting "Beneficial production and use is not in the interest of conservation of natural resources including but not limited to production of water that would result in an undue waste of geothermal energy."

Response

No action taken on comment. The regulations provides the supervisor authority to exclude such production which is detrimental to conservation of natural resources or for other reasons.

Section 3243.1

Comment Standard Oil Company of California, I-503.

The supervisor is required to determine which by-products can be economically extracted and therefore must be produced. The determination of economical productivity is left to the Supervisor's discretion. The regulations should be modified to spell out that consideration should be given to the operator's economic yardsticks incident to the development of the entire lease.

Response

No action taken on comment. Regulations provide for determination by Supervisor that beneficial production or use must be economically feasible. This, therefor, can not be an arbitrary determination.

Section 3243.1

Comment Signal Oil and Gas Company, I-461.

This regulation requires the operator to "beneficiate the by-products at the discretion of the supervisor." We object to this. There should be an economic standard for the beneficiating of any by-products from the production of geothermal steam.

Response

No action taken on comment. The regulations provides exceptions if not

economically feasible. Standards can be set out in approved manual procedures.

Section 3243.1

Comment Office of Saline Water, I-57.

Under the proposed leasing regulations, a regional supervisor is charged with the responsibility for determining whether the production and use by the lessee of by-products, including demineralized water, would meet the criteria for beneficial production. It is our opinion that, under such an arrangement, it would be extremely difficult to fulfill our responsibilities under the Saline Water Conversion Act to develop technology for desalting geothermal brines. The Assistant Secretary for Water and Power should, as a minimum, participate in the overall planning for development where the production of fresh water through desalting would likely play a significant role.

Response

No action taken on comment. The regulations provide that the office of Saline Waters technical expertise in the field will be utilized, where necessary, prior to lease issuance. Section 3200.0-6 and 3201.1-2 are considered adequate and afford sufficient authority to involve this agency in the decision making process.

Section 3243.1

Comment Bureau of Reclamation, I-44.

On lines 2 and 4 the words "and/or brine" should be added after the word "steam".

Response

No action taken on comment. The addition requested is not authorized by the statute.

Section 3243.2

Comment Gulf Oil Company, I-353.

Add the following: "The holder of a preexisting lease shall pay to the holder of the geothermal resource lease a reasonable charge for the production of byproducts subject to the preexisting lease."

Response

No action taken on the comment. This is a matter for private resolution by the two lessees. (Current proposed rule making eliminates this section.)

Section 3243.3-2

Comment Center for Law and Social Policy, I-192

The circumstances in which "beneficial production and use of byproducts" would not be required should be expanded to include situations where: (a) such activities could not be carried out in compliance with environmental protection requirements in the final regulations or lease; or, (b) where such activities cannot be carried out without resulting in substantial, adverse environmental harm.

Response

No action taken on the comment. The production and use of byproducts will be subject to the restrictions and restraints of the regulations and the lease stipulations which provide for the protection of the environment. The suggested change is unnecessary in light of overall environmental policy stated throughout the regulations.

Section 3243.3-3

Comment State of Colorado, I-89.

This subsection provides for purchase from the lessee by the federal government at fair market value of those wells which produce only fresh water and specifies some of the purposes for which such wells could be purchased. Fish and wildlife should be added as beneficial uses for which the federal government could acquire an interest in such wells.

Response

No action taken on the comment. The regulation is considered broad enough to cover any purpose for which the Secretary desires to involve the provision of the regulation.

Section 3243.3-3

Comment City of Los Angeles, I-132.

The regulations should provide for the lessee to retain and use the well as a fresh water well if this would be beneficial to his operations.

Response

No action taken on the comment. No authority in the Act to authorize such use. Such use may be subject to State Water Laws.

Section 3243.3-3

Comment State of Oregon, I-118

Secondary casing strings, not surface casing, should be the only casing needed to be acquired.

Response

No action taken on the comment. The casing which is in the well and which will be needed to produce from the well will be acquired. Casing type and amount should not be specified in these regulations.

Section 3244.1 (Current proposed rule making redesignates as Subpart 3243.)

Comment Bureau of Land Management, I-26.

Under 3244.1 reference is made to 30 CFR Part 271. We find no such section in 30 CFR. Is one being written?

Response

No action taken on comment. Part 271 of Title 30, Code of Federal Regulations published as proposed rule making F.R. 37,8994, May 3, 1972.

Section 3244.2

Comment Bureau of Land Management, I-33; Geothermal Resources International, I-640; Gulf Oil Company, I-343, I-353, I-359.

3244.2 - The word "expected" should read "excepted."

Response

Action taken on comment. The regulations have been corrected.

Section 3244.2

Comment Bureau of Land Management, I-26.

Proposed regulation 3244.2 refers to Subpart 3203 for extension of leases committed to a unit plan. However, regulations under 3203 deal specifically with extensions of individual leases and are silent as to extensions of leases committed to an approved unit. If drilling operations or production within the unit boundaries do serve to extend each lease committed thereto, the regulations under 3203 should be amended accordingly.

Response

Action taken on comment. Section 3203.1-4 (c) has been added to the regulation to accommodate the comment.

Section 3244.3-2

Comment Signal Oil and Gas Company, I-461; Gulf Oil Company, I-343, I-353.

The existing language of this proposed regulation requires that the agreement be signed by all interested parties. This may be impossible to obtain. We feel that the requirement as contained

in the Federal Oil and Gas Regulations which requires "all necessary parties" to control, only, should be the requirement.

Response

No action taken on comment. Consideration should be given to amending the regulations to read "all necessary parties" which is deemed adequate to protect the interest of all parties concerned. (Current proposed rule making accommodates this suggestion. Section 3243.3-2.)

Section 3244.4-2(b)

Comment Center for Law and Social Policy, I-192

In determining whether combinations for joint operations would "be inconsistent with the antimonopoly provisions of law," the Secretary should be required to consult with the Antitrust Division of the United States Justice Department.

Response

No action taken. Such consultation is available to the Secretary, but to require such consultation for each and every contract for joint operations would not be practical.

Section 3245.1 (Current proposed rule making redesignates as Subpart 3244.)

Comment Getty Oil Company, I-325.

We recommend reducing minimum lease size to 640 acres. This would be consistent with the provisions which provides that a tract of less than 1280 acres could be created by relinquishments since under section 3245.1 leases may be surrendered as to any 40 acre legal subdivision.

Response

No action taken, however, since consideration has been previously mentioned to reducing minimum size of lease, the matter of relinquishments should also be reconsidered, for example, permitting relinquishments up to an amount of acreage which reduces the lease to the minimum size of lease authorized by the regulations. (Current proposed rule making accommodates suggestion. See Section 3244.1.)

Section 3245.2-1

Comment Bureau of Land Management, I-33.

The regulations should be amended by substituting the word "leasing" for the phrase "the filing of new lease offers."

Response

Action taken on comment. The regulation has been so amended.

Section 3245.2-1

Comment Pacific Gas and Electric Company, I-410.

As now drafted this provision could result in an unfair penalty on a utility purchaser by virtue of a steam supplier default over which the utility may have little or no control. PG&E recommends that this section be modified to include provisions for a grace period during which time a utility purchaser could arrange to remedy a rental payment failure by the lessee or seek other remedy prior to actual termination of the lease. In this way a utility will have an opportunity to protect itself in its contractual arrangements with its suppliers.

Response

No action taken. A utility purchaser would only be buying from a producing lease on which rentals would not be a factor since the lease would be on a royalty basis. Hence, this regulation would not be applicable.

Section 3245.2-2 (b)(1)

Comment

Standard Oil Company of California, I-503.

The proposed regulation has qualified "required rental" by the insertion of the phrase "including any back rental which has accrued from the date of termination of the lease." This phrase was included in a similar section of PL 91-245 which relates to the reinstatement of oil and gas leases, but Congress did not see fit to include it in PL-581, and there is no apparent reason for including it in the proposed regulations.

Response

No action taken on comment. The regulation has retained the back rental provision to provide authority to collect all rental due and payable which may accrue during the period the matter is under review. Required rental is an open term, broad enough to include "back rental."

Section 3245.2-2 (b)(3)

Comment

Standard Oil Company of California, I-503.

The proposed regulations add two conditions which will preclude reinstatement. They are (1) if "the interest in the land has been withdrawn, disposed of, or has otherwise become unavailable for leasing" and (2) the basic criterion on which the Secretary will exercise his right to reinstate the lease is whether he "would be willing to issue a lease if a new lease offer for the same land were under consideration." Both of these conditions should be deleted from the regulations as exceeding the intent of the Act.

Response

The regulation has retained the two additional conditions to provide the authority needed to manage the resource consistent with management and environmental goals and objectives. The basic criterion of comparing reinstatement to issuance of a new lease is part of the Secretary's discretion.

Section 3245.3

Comment

Office of Hearings and Appeals, I-50.

Our primary recommendations are: (1) the intermediate appeal to the Director, Geological Survey be eliminated (Title 30 §§ 270.17 & .81); (2) the Geological Survey provisions for notice of violation/right to hearing/termination, (Title 30 § 270.80) should conform with the provisions of Title 43 § 3243.4.

In addition, the retitling of proposed regulations 43 CFR 3243.4 and 30 CFR 270.80 and the insertion of an additional sentence is necessary in both to make clear the application of the hearings and appeals regulations of this Office contained in Title 43 part 4.

Response

Action taken on the comment. The regulation has been redrafted and Section 3243.4 has been redesignated as Section 3245.3 to provide a more logical sequence. Section 3245.3 was retitled to reflect that the section covers notices and hearings and was amended to make clear the application of the provisions of 43 CFR part 4.

Section 3245.3

Comment Lake County Geothermal Control Council, I-367; Sierra Club, I-440, I-436, I-702.

Hearings on matters of noncompliance or violations should be public hearings held in the region affected.

Response

The regulation has been redrafted and Section 3243.4 has been redesignated as Section 3245.3. The regulation also provides that a lessee shall be entitled to a hearing under the provisions of 43 CFR part 4. These hearings are open to the public and usually held in the general area of the public lands affected.

Section 3245.3

Comment Pacific Gas and Electric Company, I-626, I-410

The regulations which provide for automatic termination in the event of noncompliance with lease terms, or if a steam producer does not pay royalties, are unworkable. In such matters surely civil remedies would be sufficient.

Response

Action taken on comment. The regulations are considered adequate to protect the lessee's interest. They provide for hearings and appeals on all matters pertaining to termination of leases as set forth in 43 CFR part 4. Section 3243.3 has been redesignated as Section 3245.3.

Section 3245.3

Comment Oregon Environmental Council, I-686.

The regulation permits suspension of operations and even cancellation of the lease for noncompliance with the regulations. It is our fear that lenient GRO standards might be adopted rather than requiring the suspension of operation or lease cancellation, especially at a productive site even though pollution was occurring.

Response

Partial action taken on comment. Section 3243.3 has been redrafted and redesignated as Section 3245.3. The regulation as redrafted is considered adequate to protect the public interest, conserve the resources and protect the environment. All lease terms and conditions will be available for public review prior to lease issuance. The authorized officer and/or the Supervisor will seek to assure compliance with these requirements.

Section 3245.3

Comment Center for Law and Social Policy, I-192.

This section should grant members of the public affected by operations on leased premises, as well as governmental officials, the right to file complaints and obtain hearings with respect to noncompliance with regulations or lease terms. Such interested persons should also be permitted to intervene in hearings requested by lessees, to challenge orders to correct violations.

Response

Partial action taken on the comment. Section 3243.4 has been redesignated 3245.3. The regulation has been amended to provide that Department Hearings and Appeals Procedures, Part 4 of this title, will be applicable. These procedures include provisions for hearings which are open to the public.

Section 3245.4

Comment Pacific Gas and Electric Company, I-410.

The 90-day removal period after expiration of a lease may impose an unfair burden on the utility which owns large power generation facilities which it may wish to remove. PG&E recommends that the 90-day period be revised to 270 days, with the possibility of obtaining additional time for good cause shown.

Response

No action taken on the comment. Section 3243.5 has been redesignated 3245.4. The provision for extension of the 90-day period because of

adverse weather conditions adequately covers facilities on a geothermal resource lease. Power generation facilities would be built under a separate permit, lease, or license issued in accordance with other appropriate regulations.

Sections 3245.4, 3245.5

Comment Bureau of Land Management, I-33.

We suggest subsections 3243.4 and 3243.5 be under subpart 3245.

Response

Action taken on comment. The regulation has been redrafted and redesignated..

2. RESPONSE TO COMMENTS RECEIVED PERTAINING TO THE GEOTHERMAL OPERATING REGULATIONS, 30 CFR 270, PUBLISHED IN THE FEDERAL REGISTER ON JULY 23, 1971, AS PROPOSED RULE MAKING (36 FR 142)

Comments that were not specific as to the particular section to which they were being directed or those which included generalized comments in connection with a particular section are being considered as general comments.

General Comments

Comment Birchan Corporation, I-166; Center for Law and Social Policy, I-192; Lake County Geothermal Control Council, I-367; Magma Power Company, I-373; O'Rourke, John T., I-406; Sierra Club, I-436, I-702.

Failure to provide minimum standards for all areas of operations; Department employees should monitor and enforce standards and conditions, not set them.

Response

Minimum standards are contained in the regulations by reference and require the operators to comply with applicable State and Federal laws and regulations. Federal standards for the protection of the environment have been established by the Environmental Protection Agency but each State has the opportunity to establish its own requirements in regard to air and water pollution. It is the intent of the Department to require compliance in accordance with existing and future standards but in certain cases more stringent requirements may be necessary to minimize effects on the environment. Therefore, it is necessary that the Supervisor be authorized to act in these cases and set specific local standards. The same criteria are applicable to all phases of geothermal operations. Consideration is given to all phases of a proposed operation and would include an analysis of exploratory operations by the Geological Survey in consultation with the appropriate surface management agency and any other agency which may have jurisdiction in the area. The approval of any operation is a cooperative function and covers both surface and subsurface considerations which require input from many agencies. The Supervisor considers all these factors and, when appropriate, will establish such requirements for conducting operations as are necessary to protect the environment and minimize environmental impact. These actions are not arbitrary actions by the Supervisor and will be accomplished through the issuance of formal Geothermal Resource Operational Orders. These provisions in the operating regulations are necessary in order for the Department to meet the legal responsibilities assigned to the Secretary of the Interior. It is the Department's intention to cooperate with State and local agencies, within the framework of existing laws and regulations, so as to further the development

of the Nation's geothermal resources and utilize them to the maximum while protecting life and the environment. The requirement of mandatory public hearings on all phases of operations would be an unreasonable burden to both the lessee and the government and would be of marginal value in improving the management process.

Section 270.11 - General Functions

Comment

Department of Agriculture, I-7; Center for Law and Social Policy, I-192; Magma Power Company, I-373.

Comments are the same as presented and discussed under "General Comments."

Response

Appropriate language changes have been made in respect to the Department of Agriculture comment.

There are certain requirements in administrative actions and drilling and producing activities that are required by 43 CFR 3200 and the lease forms that will require action by the Supervisor. We do not believe there will be an overlap of authority.

Section 270.12 - Regulation of operations

Comment

State of Oregon, I-107; Center for Law and Social Policy, I-192.

The response to the comments directly related to this section were previously discussed under "General Comments."

Section 270.13 - Required samples, tests, and surveys

Comment

Center for Law and Social Policy, I-192.

All information submitted by a lessee or operator should be made available to the public.

Response

The Department considers such information as a part of a lessee's or operator's right to conduct business, and such information is covered under the Public Information Section of the Administrative Procedures Act. Section 270.77 provides for inspection of records by the public with the consent of the lessee so long as the lease is in effect. Upon expiration of a lease, such information is available to the public in the office of record.

Section 270.14 - Drilling and abandonment of wells

Comment State of Oregon, I-118.

Notice should be given before the Supervisor can authorize work at the expense of the lessee or his surety.

Response

Should operational deficiencies occur, the lessee and/or operator will be notified pursuant to the provisions contained in Section 12 of the Act (30 U.S.C. 1011) and implemented by Section 270.90.

Section 270.15 - Well spacing and well casing

Comment Department of Agriculture, I-7; Center for Law and Social Policy, I-192; Lake County Geothermal Control Council, I-367; Sierra Club, I-436.

Well-spacing and well-casing programs should comply with State and local standards.

Response

Well spacing is based upon the ability of a well to efficiently drain a reservoir and upon economic considerations. Normally, an operator will petition a State regulatory agency and, through the hearing process, have the State issue a spacing order for the proper development of the natural resource (oil, gas). It is anticipated that similar procedures will be established by each State in connection with proper development of geothermal resources on State and private lands. As in oil and gas development, when Federal lands are involved or affected by State spacing orders, the Geological Survey will have a representative at such hearings concerning geothermal resources development. Objections or concurrence on spacing orders is given based upon the evidence presented at the hearing and upon the Geological Survey's own review of the proposal. This relationship has proven to be satisfactory in oil and gas development, and cooperation with the states is expected to continue as it has in the past. This does not preclude the Supervisor from establishing well spacing for development on Federal lands where the area has not been spaced under State orders.

It has been found in oil and gas development that State standards for casing programs have to be varied in order to protect other natural resources and the subsurface environment. Therefore, requirements must be established on an area-by-area basis in order to afford optimum subsurface protection. Blowout equipment and drilling procedures likewise vary from area to area. A general policy has been in effect requiring that, if procedures for operations have been established in an area, the most stringent requirements will be enforced with respect to Federal leases for operations conducted thereon. See also Sections 270.11 and 270.34.

Section 270.16 - Value and payment for losses

Comment American Thermal Resources, Inc., I-160, I-567; Pacific Gas and Electric Company, I-410; Union Oil Company, I-522.

Object to Supervisor establishing value of products without due consideration being given to all relevant matters.

Response

Section 270.16 has been rewritten to limit this particular determination to losses due to waste and failure to drill and produce protective wells. The value will be determined in accordance with Section 270.62.

Section 270.17 - Suspension of operations and production

Comment Office of Hearings and Appeals, I-50; Center for Law and Social Policy, I-192; Gulf Oil Company, I-343; Oregon Environmental Council, I-686.

Suspension of operations and cancellation of leases may not be enforced by the Supervisor for non-compliance but a more lenient position may be taken by the Supervisor through the issuance of GRO Orders. Public participation should be required in the approval process for resumption of suspended operations. Provide for appeals of decisions of the Supervisor. Delete (d) drilling demands.

Response

This section does not pertain to suspension of operations or cancellation of leases for non-compliance with the regulations. This section provides for the suspension of operations or production, or both, in the interest of conservation and prevention of waste. Subsections (c) and (d) pertain to reinstatement of the operating or producing requirements under the lease terms. Subsection (e) covers the right of appeal of decisions rendered by the Supervisor pursuant to Section 270.90 which includes appeal to the Board of Land Appeals.

Section 270.30 - Lease terms, regulations, waste, damage, and safety

Comment Pacific Gas & Electric Company, I-410.

No need for requirements for environmental protection since compliance with National Environmental Policy Act of 1969 would provide environmental protection.

Response

General requirements are set out in the regulations so that there can be no question of what is expected of a lessee or operator when conducting geothermal resources operations on Federal lands.

Section 270.33 - Drilling and producing obligations

Comment State of Oregon, I-118.

Is this action subject to appeal under Section 270.80-81?

Response

Any lessee or operator who is aggrieved by a decision of the Supervisor has the right of appeal pursuant to Section 270.90.

Section 270.34 - Plan of operation (formerly: Drilling and development programs)

Comment State of California, I-78, I-87; State of Oregon, I-118; American Thermal Resources, Inc., I-567, I-160; Center for Law and Social Policy, I-192; Getty Oil Company, I-325; Sierra Club, I-702.

Solicit and consider public comment and consult with appropriate Federal, State, and local representatives prior to approving development programs. Data required by this Section is not available to operator. State should regulate operations on Federal lands. This Section requires submission of proprietary data and interpretations.

Response

The Section has been retitled and rewritten so as to require those items that are necessary in surface management activities. The location of more than one well may not be known during the initial stage of exploratory drilling. Subsequent plans will be required if exploration or development of an area continues.

There are provisions during the process of making an environmental analysis of a proposed exploratory program which includes consultation with other agencies (Federal, State and local) which have a direct interest in the area of development. The reasons for not having open hearings and input from the public on every operation was discussed in the general comments as were the reasons for the Department retaining supervision over operations conducted on Federal lands.

Section 270.37 - Well records

Comment State of Oregon, I-118; Union Oil Company, I-522.

This section is not needed. A lessee should provide information only if work is performed.

Response

This section provides the lessee or operator with a general guide as to what is required in the way of records for each operation. The lessee or operator should have a complete record of all operations and these are open to inspection by the Supervisor or his authorized representative. If an operation is not performed, it is assumed that no record is necessary.

Section 270.38 - Samples, tests, and surveys

Comment State of Oregon, I-118; Union Oil Company, I-522.

Delete this section as it is covered under 270.37. Requirements should be limited to basic data and should not include interpretive data.

Response

Section 270.37 sets out the type of records that will be maintained by the lessee or operator. This section provides for tests that may be deemed necessary by the Supervisor in order to obtain specific information concerning operations. This data should not be limited to basic data as interpretations are necessary for planning of future developments or use of the geothermal resources. In order to give proper consideration to future requests to conduct operations, the Supervisor must take into consideration the interpretation the operator has placed on the basic data.

Section 270.39 - Directional survey

Comment State of Oregon, I-118.

Directional surveys should be required when holes deviate more than 3° per 100 feet of depth.

Response

This section applies to wells which are intentionally drilled as directional wells. If a well is drilled in a normal manner and there is a definite need to know the exact location of the wellbore, the Supervisor can, pursuant to Section 270.38, require that a directional survey be conducted.

Section 270.40 - Well control

Comment Center for Law and Social Policy, I-192.

Need specific requirements and guidelines in the regulations.

Response

It is preferable to keep certain phases of geothermal operations as flexible as possible. Requirements and guidelines can be prescribed for operations conducted in a specific area by the use of GRO Orders. Requiring the use of specific types of equipment or material is too restrictive since improvements in equipment and material are constantly occurring as more knowledge is gained from experience.

Section 270.41 - Pollution

Comment Department of Agriculture, I-7; State of Colorado, I-89; State of Oregon, I-107; Center for Law and Social Policy, I-192; Gulf Oil Company, I-343; Lake County Geothermal Control Council, I-367; Oregon Environmental Council, I-686; Pacific Gas & Electric Company, I-410; Sierra Club, I-436.

Need to establish standards for all elements of pollution. GRO Orders could be permissive. Delete the entire section.

Response

This section has been revised to include compliance with existing and future Federal and State standards for control of air, land, water, and noise pollution. As previously stated, the Supervisor may require more stringent requirements for any given area if conditions so warrant. Disposal of effluents will have to be done in accordance with a plan approved by the Supervisor and in accordance with any existing regulations or requirements. If no regulations exist, it is the Supervisor's responsibility to approve a plan and technique which will afford optimum environmental protection. Appropriate changes in wording have been made as suggested. See also changes in Sections 270.11 and 270.34.

Section 270.42 - Noise abatement

Comment Center for Law and Social Policy, I-192; Gulf Oil Company, I-343; Lake County Geothermal Control Council, I-367; Sierra Club, I-436.

Standards should be established to control noise. The lessee shall use care to protect the operating personnel and public from noise pollution.

Response

Section 270.41 states that Federal and State standards will be followed unless more stringent requirements are made by the Supervisor. Compliance with Federal and State regulations should afford adequate protection to employees and the public.

Section 270.43 - Land Subsidence and Seismic Activity (New Section)

This is a new section which has been added requiring the lessee to take action to prevent subsidence and seismic activity. Provides for monitoring activities by the lessee or by the Federal Government.

Section 270.44 - Pits and Sumps (previously 270.43)

Comment Department of Agriculture, I-7; American Thermal Resources, Inc., I-160, I-567; Center for Law and Social Policy, I-192; Lake County Geothermal Control Council, I-367; Sierra Club, I-436.

Require conformance to applicable State and local regulations. Return sites to their natural state insofar as is practicable. Inspection should be performed by Supervisor. The lessee shall provide and use pits and sumps of adequate capacity and design - - -.

Response

This section has been revised and contains ample provisions to permit effective control and prevent pollution. See also changes in Sections 270.11 and 270.34.

Section 270.45 - Well abandonment (previously 270.44)

Comment Geological Survey, I-45; Center for Law and Social Policy, I-192; Lake County Geothermal Control Council, I-367; Sierra Club, I-436.

Upon abandonment of a well site, the area should be restored as far as practicable to its original condition. Provision should be made to allow wells to be used by the Federal Government for heat-flow studies.

Response

This section is adequate for proper restoration of the surface. A non-productive well, with a release from the operator, could be used by a Federal agency for studies.

It is preferable to enter into an agreement with the interested parties in order to use a well for heat-flow studies. There is no need for inclusion of this type of transaction in the regulations.

Section 270.46 - Accidents (previously 270.45)

Comment State of Colorado, I-89.

Report accidents to appropriate State officials.

Response

The regulations in this part pertain to Federal requirements and not to the obligations of a lessee or operator to State governments.

Section 270.47 - Workmanlike Operations (previously 270.46)

Comment Gulf Oil Company, I-353.

Requests modification of the language to reflect that only accidents from negligence would be in violation of this section.

Response

An appropriate language change has been made.

Section 270.48 - Departure from Orders (previously 270.47)

Comment Center for Law and Social Policy, I-192.

Deviations from orders should be allowed only after public comment and consultation with appropriate Federal, State, and local officials. Public hearings and publication of decisions granting waivers or deviations should be required.

Response

The language has been changed to reflect that this section deals with variances and not waivers or deviations. Such variances are not expected to be a common occurrence but to serve emergency-type cases.

Section 270.49 - Sales Contracts (previously 270.48)

Comment American Thermal Resources, Inc., I-160; Southern California Edison Company, I-470.

Unclear on "the effective date" thereof.

Response

Appropriate language change made. "The effective date of the sales contract."

Section 270.62 - Value of Geothermal Production for Computing Royalties

Comment American Thermal Resources, Inc., I-160, I-567; Gulf Oil Company, I-343; Magma Power Company, I-373; Phillips Petroleum Company, I-429; Union Oil Company, I-522.

Value to be based upon "arms length" contracts. Value should be stable during the life of the contract. As presently written, there is the possibility of a higher value being established by the Supervisor than is being received by the lessee.

Response

This section has been rewritten to include the views presented in the comments. Factors which must be considered by the Supervisor in establishing a value for computing royalties are varied and a determination cannot be based upon any single factor.

Section 270.71 - Application for Permit to Drill, Redrill, Deepen, or Plug-back (previously 270.91)

Comment Union Oil Company, I-522.

The provision of part (c) should be limited to wells drilled within 660 feet of a property line.

Response

The data required is necessary for planning future development of a geothermal reservoir and for cases where equities may be involved. Such information would also be required for any proposal to drill directional wells.

Section 270.72 - Sundry Notices and Reports on Wells (previously 270.92)

Comment Getty Oil Company, I-325; Southern California Edison Company, I-470.

The Supervisor should be able to grant oral approval to plug a well.

Response

Under (a) of this part, the Supervisor does have the flexibility to grant oral approval to plug wells.

Section 270.73 - Log and History of Well (previously 270.93)

Comment Union Oil Company, I-522.

The time for submission of data should be extended to 90 days.

Response

Past experience in oil and gas operations has indicated that 30 days is ample time to submit the required data. The information is necessary to assist the Supervisor in making decisions on production and development activities. These decisions require that the information be submitted within a 30-day period.

Section 270.77 - Public Inspection of Records (previously 270.97)

Comment State of Oregon, I-118; Center for Law and Social Policy, I-192; Getty Oil Company, I-325; Oregon Environmental Council, I-686; Southern California Edison Company, I-470; Standard Oil Company of California, I-503; Union Oil Company, I-522.

Information submitted to the Supervisor should not be made available to

the public without the consent of the lessee. Information should be made available after termination of a lease.

Response

This section has been rewritten to reflect current policy regarding reports and information submitted to the Supervisor by a lessee or operator. Such information, though required by the regulations, is a part of doing business and is proprietary information until such time as the lease terminates. This is in accord with the provisions of the Public Information Section of the Administrative Procedures Act.

Section 270.80 - Noncompliance with regulations or lease terms

Comment Office of Hearings and Appeals, I-50; State of Colorado, I-89; Center for Law and Social Policy, I-192; Oregon Environmental Council, I-686; Washington Environmental Council, I-545.

This section should provide for a shut down of operations if a violation of the lease terms or regulations should occur. Appeals procedures set forth are not in accordance with Departmental procedures. Action on surety bond should be detailed for cases of non-compliance.

Response

The types of violations that can be committed by an operator are of varying degrees of magnitude and can be operational or administrative. It is not the intent of the Department to permit operational violations to continue which are unsafe or can result in pollution. Violations in this category would result in shut downs while operations could continue for administrative violations until corrected or an appeal is finalized. This section has been modified to reflect this intent.

Action on surety bonds for non-compliance is covered partly in Section 270.14 and in 43 CFR 3206.7-1.

Section 270.90 Appeals (previously 270.81).

Comment Office of Hearings and Appeals, I-50; Center for Law and Social Policy, I-192; Gulf Oil Company, I-343; Lake County Geothermal Control Council, I-367; Sierra Club, I-436.

The public should participate in appeals for relief from remedial orders. Recommend use of current appeal procedures.

Response

This section has been rewritten to reflect the current appeals procedures. Public participation was previously discussed under "General Comments."

3. RESPONSE TO COMMENTS RECEIVED PERTAINING TO THE GEOTHERMAL RESOURCES UNIT PLAN REGULATIONS, 30 CFR 271, PUBLISHED IN THE FEDERAL REGISTER ON MAY 3, 1972, AS PROPOSED RULE MAKING (37 FR 86)

Comments that were not specific as to the particular section to which they were being directed or those which included generalized comments in connection with a particular section are being considered as general comments.

General Comments

Comment Transcontinental Power Company, I-518

Object to unitization and/or the cooperative operation of Federal geothermal leases on the premise that unitization may be used to tie leases together for the purpose of holding large blocks of acreage requiring fewer exploratory wells.

Response

The proposed leasing regulations and unit regulations do not create any means for extending geothermal leases beyond the terms provided in the Act. The unitization provisions of the Act (Section 18) must be carefully implemented in order to obtain orderly and efficient development of the resource while preventing this type of abuse.

Comment American Thermal Resources, Inc., I-164

Suggest that the unit regulations (proposed form of unit agreement for unproved areas) specifically excuse or delay compliance with requirements for additional or continued drilling operations when no markets are available or construction of generating facilities is significantly lagging behind development drilling. (Operators have drilled sufficient wells to provide excess producing capabilities.)

Response

The unit regulations and the proposed form of unit agreement are thought to be sufficiently flexible to be in keeping with the basic requirements for timely development and conservation of the geothermal resources. As leases are unitized and more reliable information is gained, appropriate modifications may be incorporated into existing unit agreements through amendment, and new proposals can incorporate appropriate provisions in the text of the agreement circulated for execution.

Comment Oregon Environmental Council, I-402

Suggest that geologic information, including the results of geophysical surveys and other information submitted as justification for unitization of previously issued Federal leases in a given area, should be made available to the public.

Response

Geological and geophysical information is, by its very nature, proprietary and protected from disclosure under the Public Information Section of the Administrative Procedures Act. However, protection of proprietary information is not expected to restrict the Department's ability to support its determination that a given proposal is in the public interest.

Comment Getty Oil Company, I-337

Interpret the proposed regulations as permitting only producing wells to be continued in unit agreements and suggest that provision should be made to continue injection wells within a unit area. Getty Oil apparently recognizes that the proposed unit agreement provides for the continuation of injection wells in the unit area by the inclusion of such wells in participating areas, when they are necessary for unit operations, and finds that approach undesirable.

Response

The proposed unit agreement attempts to anticipate and to provide equitable practical solutions to the many complex problems which may be encountered as a result of the combination of different leasehold interests under a single overriding instrument. The proposed unit agreement has been incorporated into Department regulations as a "model" form which should be used in the drafting of specific provisions many of which may be unique for a given agreement covering a given unit area.

Comment

Pacific Gas and Electric Company, I-428

Believe that the restrictive nature of the proposed regulations and the powers vested in the Director and the Supervisor will discourage development; also, that a considerable degree of flexibility is required in the administration of leases and other agreements.

Response

The Department feels that the proposed unit regulations provide the necessary degree of flexibility in the administration of the Geothermal Steam Act. No authority is vested in the Secretary, the Director, or the Supervisor by the proposed regulations which is not provided or

anticipated by the Geothermal Steam Act as necessary to the proper administration thereof.

Comment Texaco, Inc., I-514

Cite the experience gained through administration of the oil and gas regulations, and urge that the geothermal resources unit regulations be modified to make them consistent with the unit regulations for oil and gas operations (30 CFR 226).

Response

The modifications proposed incorporate provisions unique to the Mineral Leasing Act which govern oil and gas leasing and operations. The provisions of the Geothermal Steam Act of 1970 differ in this respect from the Mineral Leasing Act of February 25, 1920. Therefore, the geothermal unit regulations have been prepared to reflect the provisions of the Geothermal Steam Act and cannot incorporate provisions not consistent therewith.

Section 271.2(i) and Article 2.1(d)

Comment Gulf Oil Company, I-363

Suggest a revision of these parts since the definition of participating area seemed confusing.

Response

Revised language as contained in the respective sections should clarify this situation.

Section 271.3

Comment Environmental Protection Agency, I-64

This section should contain some general background information on the program implemented by this subpart. As it presently stands these regulations may be confusing as they refer to "applications for designation of an area" but do not state when such an application is required, or why.

Response

This matter is adequately answered in Section 271.1, thus no change in Section 271.3 is appropriate.

Section 271.4

Comment Environmental Protection Agency, I-64

This section provides for preliminary consideration of unit or co-operative agreements. It states the form of unit agreement as set forth in Section 271.12 is "acceptable" for use in "unproved areas." "Unproved areas" is not a defined term. A further question arises as to whether there are other "proved areas" for which the form is not "acceptable." In addition, nothing is said about "cooperative agreement" although they are required to follow the same approval.

Response

It was not thought necessary to define "unproved area" since an "unproved area" is one which has yet to be proved capable of producing geothermal resources for beneficial use. It is expected that agreements which cover "proved areas," i.e., areas proved capable of producing geothermal resources for beneficial use, will contain special provisions recognizing special circumstances unique to the facts ascertained by the exploratory program which leads to the proving up of the area to be unitized. The procedures for obtaining designation and approval of a "cooperative agreement" are the same as for a "unit agreement, however, the basic nature of cooperative agreements does not lend itself to the drafting of a "model" form of agreement. The basic differences are spelled out in the definitions of unit agreements and cooperative agreements contained in Sections 271.2(a) and (b).

Section 271.5

Comment Environmental Protection Agency, I-64; Gulf Oil Company, I-363

The meaning of the second sentence in this section is unclear and should be clarified.

Response

The printing error in this section has been corrected so that the word "statement" now reads "State law."

Section 271.7

Comment Environmental Protection Agency, I-64

This section provides that the proponent of a unit agreement must try to obtain the agreement of other owners, presumably those in a designated area. The effect of failure to obtain such agreements is unclear insofar as a non-joining owner is concerned. It seems that development of the geothermal resources underlying the land of a non-joining owner would be a taking without due process or without just compensation.

Response

The owner of any geothermal resource interest in an area proposed for unitization must be afforded an opportunity to unite with the other owners of interest in the development of the geothermal resources by operations in the unit area. If an owner of interests in the geothermal resources chooses not to commit his interest to a proposed unit agreement, he continues to have the opportunity to enjoy the benefits from the development and operation of his land (or interests) on an individual or competitive basis. Under competitive operations, it may be possible for an individual owner to fail to obtain the maximum benefits which might otherwise be available to him under a more effective operating program.

Section 271.8(e)

Comment Texaco, Inc., I-514

Recommend addition to Section 271.8(e) as follows:

"Whenever the Federal land involved in a unit or cooperative agreement accounts for less than 50 percent of the acreage of the unitized lands, and whenever, if the field involved is fully developed, the Federal land has less than 50 percent of the estimated recoverable unitized substances, the agreement may, with the approval of the Secretary or his duly authorized representative, make portions of the Operating Regulations, Part ____ of this chapter, inapplicable to operations under the agreement with respect to Federal land."

Response

The inclusion of the language proposed by Texaco is not appropriate. The question of waiving Federal regulations will depend upon several conditions only one of which might be the amount of Federal land or unitized substance involved. For example, another factor to be considered would be the relative location of Federal and non-Federal lands in a proposed area.

Section 271.9

Comment Union Oil Company, I-532

This provision should provide that the Department will keep confidential in accordance with applicable Federal law, all interpretive information required to be submitted.

Response

Information submitted in connection with requests for designation of unit areas will not be made available to the public (Section 271.3) and the information submitted during operations will only be available after termination of the Federal leases involved.

Section 271.10

Comment American Thermal Resources, Inc., I-164

Provisions in this section arbitrarily require the unit operator to maintain a collective corporate surety bond or personal bond. This should be amended to give the unit operator the right to maintain a collective surety bond, as all or a portion of the Working Interest owners within the unit may have coverage under Statewide or Nationwide bonds and the maintenance of a separate unit bond would be an unnecessary expense and serve no purpose.

Response

Appropriate language changes have been made which should remedy the anticipated situation concerning excessive bonding requirements.

Section 271.12 Second "Whereas" Clause

Comment Environmental Protection Agency, I-64

There is a reference to a determination and "certification" by the Secretary. Is this different from the determination without certification referred to in Section 271.8(a) by the Secretary or his delegate? Is it different from the determination by the Director USGS to designate an area under Section 271.3?

Response

The reference to a determination and certification in this introductory portion of the model form of unit agreement relates to the determination mentioned in Section 271.8(a). Section 271.8(a) provides

that the Secretary's approval which is dependent upon a determination that the agreement is necessary and advisable . . . etc., 'will be incorporated in a certificate appended to the agreement.' Said certificate is normally entitled "CERTIFICATION - DETERMINATION" or "APPROVAL - CERTIFICATION - DETERMINATION." The Director's approval of a request for designation of an area as logically subject to unitized operations under Section 271.3 differs from the determination cited in the second "Whereas" clause and as discussed in Section 271.8(a).

Section 270.12, Article III (3.1)

Comment Environmental Protection Agency, I-64

Is a "unit area" the same thing as an area designated under Section 271.3?

Response

The "unit area" is normally the same as the area designated under Section 271.3.

Section 270.12, Article IV (4.1)

Comment Environmental Protection Agency, I-64

The Unit Operator can expand or contract the Unit Area, subject to the approval of the Supervisor. Can such a decision bind owners who are not parties to the agreement? Can the Unit Area be expanded beyond the boundaries designated by the Director under Section 271.3?

Response

In the absence of some involuntary "pooling" action under established legal or contractual authority, an expansion or contraction of the unit area should not prove binding upon an owner of geothermal resource interests who is not a party to the unit agreement. Perhaps it should be noted that the Director's approval for a proposed expansion as clarified in revised Section 4.1(a) would, in essence, constitute a revision of the area embraced by his previous designation under Section 271.3.

Section 271.12, Article IV (4.2)

Comment American Thermal Resources, Inc., I-164

The provision in this section which provides that any portion of a

lease excluded from the unit area shall not be continued or extended by production from the unit may be in direct contradiction to the lease agreement between the working interest owner and the landowner. We object to this provision and suggest that adequate changes be made which respects rather than usurps the contractual relationship between a lessor and lessee.

Response

Since the primary reason for a unit agreement is to provide a vehicle that amends the various lease agreements, there are of necessity provisions in the text of the model unit agreement which will be "in direct contradiction to" the lease agreements between lessors and their lessees. Operators who wish to retain the relationships established by individual lease instruments limit themselves to competitive operations or to development under a "Cooperative Agreement." (See 30 CFR 271.2(b).)

Section 271.12, Article IV (4.3)

Comment Union Oil Company, I-532

Suggest the deletion of "All quarter-quarter (1/4--1/4) sections of land" and the substitution of the following which is similar to Oil and Gas Unit Agreements:

"All legal subdivisions of unitized lands (i.e., 40 acres by Government survey or its nearest lot or tract equivalent in instances of irregular surveys, however, unusually large lots or tracts shall be considered in multiples of 40 acres, or the nearest aliquot-equivalent thereof, for the purpose of elimination under this subsection."

Response

The automatic contraction provisions incorporated in this article were included to assure that non-participating lands may not be maintained for an unduly long period of time. The text of the model provision (revised to substitute "legal subdivisions" for "quarter-quarter blocks") should provide adequate time to incorporate land necessary to unit operation within the participating area while freeing non-participating lands for use in such other endeavors as may prove beneficial to the owners of interests in such non-participating lands.

Section 271.12, Article IV (4.4, 4.5, 4.6)

Comment Gulf Oil Company, I-363; Sun Oil Company, I-511; Union Oil Company, I-532

Feel that the five-year automatic contraction period as well as the four-month continuous drilling obligation are too short. Suggest six months be substituted for four months.

Response

The substitution of "six-month" or longer periods for the "four-month" periods contained in Sections 4.4, 4.5, and 4.6 does not appear warranted. Article IV, especially Section 4.6, provides adequate means for obtaining such relief as may be justified by the circumstances unique to each case. Section 4.6 was incorporated in the model form of unit agreement in anticipation that there might be unique or unanticipated circumstances which would justify a different time period between wells.

Section 271.12, Article VI

Comment State of Colorado, I-100

No mention is made of any obligation on the part of the Unit Operator for protection of the environment. Such provisions are included as obligations of the lessees and operators under proposed Sections 270.30 through 270.47, Part 270 of Title 30 CFR. In our judgment, the Unit Operator should also have some obligation for environmental protection.

Response

The unit operator's obligation to protect the environment is undiminished by the failure to cite it in the provisions of Article VI. However, it should be noted that Article XI, Section 11.3, specifically mentions the inclusion of operating practices necessary to protection of the environment as part of the Plan of Operations.

Section 271.12, Article VI (6.1)

Comment Sun Oil Company, I-511; Texaco, Inc., I-514; Union Oil Company, I-532

Recommend the deletion of "and utilization" to conform to Oil and Gas Unit Regulations since it may be interpreted that the Unit Operator

would be compelled to construct a plant to utilize the unitized substances.

Reference is made to the duties and obligations of the Unit Operator including distribution and utilization of unitized substances. This may very well have undesirable tax, public utility and other legal ramifications. There should be a provision permitting each party to take its portion of unitized substances in kind, although as a practical matter this will probably never happen.

Designates a Unit Operator and apparently obligates the Unit Operator to conduct the drilling and producing operations and "distribution and utilization of Unitized Substances." This appears to place the Unit Operator in the position of selling and delivering its own and non-operators portion of the steam.

We suggest that the first sentence of Article 6.1 be revised as follows:

"_____ is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development and production of Unitized Substances as herein provided."

Response

In view of the nature of the resources to be developed under the proposed unit agreement, inclusion of "distribution and utilization of Unitized Substances" in the responsibilities of the unit operator seems necessary. Should an instance develop where the inclusion of such language in a specific unit agreement would be inappropriate or undesirable, appropriate modification in the language of the model form of unit agreement may be authorized by the Secretary or his delegate. We believe that the text of the unit agreement must, as a practical matter, reflect the circumstances and conditions expected during actual operation. The incorporation of provisions permitting actions which, as a practical matter, will probably never happen does not seem wise since such provisions could only prove to be a source of confusion for the personnel who must implement the contract.

Section 271.12, Article VI (6.2, 6.3)

Comment Sun Oil Company, I-511

It is recommended that the following provisions be inserted in the proposed form of unit agreement as Articles 6.2 and 6.3, respectively:

"6.2 Taking Unitized Substance in Kind. The Unitized Substances allocated to each Tract shall be delivered in kind to the respective parties entitled thereto by virtue of the

ownership of geothermal resources therein or by purchase from such owners. Such parties shall have the right to construct, maintain, and operate within the Unit Area all necessary facilities for that purpose, provided they are so constructed, maintained, and operated as not to interfere with Unit operations. Any extra expenditures incurred by Unit Operator by reason of the delivery in kind of any portion of Unitized Substances shall be borne by the owner of such portion. If a Royalty Owner has the right to take in kind a share of Unitized Substances and fails to do so, the Working Interest Owner whose Working Interest is subject to such Royalty Interest shall be entitled to take in kind such share of Unitized Substances."

"6.3 Failure to Take in Kind. If any party fails to take in kind or separately dispose of such party's share of Unitized Substances, Unit Operator shall have the right, but not the obligation, for the time being and subject to revocation at will by the party owning the share, to purchase or sell to others such share; however, all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any such contract be for a period in excess of one year. The proceeds of the Unitized Substances so disposed of by Unit Operator shall be paid to the Working Interest Owners of each affected Tract or a party designated by such Working Interest Owners who shall distribute such proceeds to the parties entitled thereto."

Response

The provisions of the paragraphs Sun Oil Company proposed for incorporation as proposed Articles 6.2 and 6.3 in anticipation that parties may wish to choose to take unitized substances in kind and/or to not take unitized substances in kind do not seem appropriate in view of the nature of the resources being unitized. Should circumstances develop which warrant incorporation of comparable provisions in a given contract, adequate authority exists which would permit the Department to grant approval for justified modifications in the text of an agreement approved for use in the unitization of a given area.

Section 271.12, Article VIII (8.2)

Comment Texaco, Inc., I-514

Change to 75 percent, since we believe the stated 60 percent is too low. This also conforms to the Oil and Gas Unit Regulations.

Response

The "60 percent" cited in Section 8.2 may be reduced or increased as appropriate to the circumstances of a given case.

Section 271.12, Article X (10.1)

Comment Texaco, Inc., I-514; Union Oil Company, I-532

Recommend the deletion of "and/or utilizing" to conform to Oil and Gas Unit Regulations since it may be interpreted that the Unit Operator would be compelled to construct a plant to utilize the unitized substances.

Response

References to "distributing and/or utilizing Unitized Substances" reflect the unique nature of the resources being unitized and seem to be necessary to assure that there will be a minimum of confusion regarding the duties and responsibilities of the unit operator.

Comment Sun Oil Company, I-511

It is suggested that Article 10.1 be revised as follows:

"Subject to the consent and approval of a Plan of Operation by the Supervisor, the right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting and producing Unitized Substances are hereby delegated to, and shall be exercised by, the Unit Operator as provided in this Agreement."

Response

This section has been modified to read:

"The right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting, producing, distributing, and/or utilizing unitized substances are hereby delegated to, and shall be exercised by, the Unit Operator in accordance with a Plan of Operation approved by the Supervisor as provided in this Agreement."

Section 271.12, Article X (10.4, 10.5)

Comment Texaco, Inc., I-514; Union Oil Company, I-532

Recommend insertion of following paragraph at the end to provide reasonable notice and hearing on behalf of Unit Operator; again to conform to Oil and Gas Unit Regulations:

"Powers in this section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than 15 days from notice."

These provisions place a tremendous amount of power in the hands of the Supervisor and Director. These provisions should be rewritten to provide that the end results shall be accomplished by the Unit Operator on the basis of reasonable management, etc., but the means of accomplishing these ends should be left in the hands of the Operator unless the Operator fails to perform its required duties. The "rate of prospecting and development" and "the quantity and rate of production" referred to in 10.5 will be covered by the terms of private and Federal geothermal leases or contracts with public utilities. This provision would give the Director the right to abrogate or override these contracts, which would be unacceptable to the utility companies and private landowners.

Response

These sections vest no new power in the Supervisor and/or Director which differs significantly from powers vested in said officials by controlling Federal lease provisions, Federal regulations and/or laws. These sections simply indicate the existence of such authority for the benefit of those who may not be aware of its existence. Should circumstances indicate a need for modification of the model language to meet the needs of a given situation, justified modifications which do not imply restrictions of the authority of Departmental officials may be made in the provisions of a unit agreement approved for use in the unitization of a given area. The provision Texaco suggested for addition to Section 10.5 seems unnecessary and may result in confusion should there be an apparent conflict between the unit and controlling leases and/or regulations.

Section 271.12, Article XI

Comment Environmental Protection Agency, I-64; State of Colorado, I-100

Question whether the Supervisor would have the necessary expertise to make a determination of completeness and adequacy of environmental protective measures. Should contain review procedures by higher

authorities. The plan required could contain major "environmental impacts" that are not being identified or discussed. It may be necessary to file 102 statements with respect to particular projects, presumably at the time the Plan of Operation is finalized. The time limits may make it difficult to prepare and review adequately such statements.

Response

The expertise necessary for an evaluation of the adequacy of measures proposed for the proper protection of the environment and conservation of the natural resources of the unit area will be available to the Supervisor. This includes any required expertise from within or external to the Department of the Interior. The Supervisor has the responsibility for the initial assessment of probable impact on the environment and initiates appropriate procedures when circumstances warrant the preparation of "102 statements" relative to a particular project.

The Department has initiated such a review with respect to a supplemental Plan of Operations submitted by the Unit Operator under the Santa Ynez Unit agreement. The Santa Ynez Unit agreement embraces Federal submerged lands leases in the Santa Barbara Channel. There have been 31 exploratory oil and gas wells drilled within the unit area in water depths up to 1,490 feet.

In view of the similarity between the language of Article XI and comparable provisions in the Santa Ynez Unit agreement, the "time limits" contained in Article XI are considered sufficiently flexible to permit extensive review of environmental consideration should circumstances indicate a need for such a review.

Section 271.12, Article XI (11.3)

Comment State of Colorado, I-100

This Article provides the Plan include protective measures to "the extent practicable." We must raise an objection to such permissive language. Deletion of the above-quoted phrase would overcome our objection.

Response

The objection to the incorporation of "to the extent practicable" as "permissive" probably results from confusing "practicable" which means "possible or feasible, able to be done, capable of being put into practice or of being used" with "practical" which might be interpreted as "permissive" if "costs" of protection and "efficiency" of proposed operations may be weighted unduly heavily.

The proposed language seems appropriate to the situation anticipated.

Section 271.12, Article XI (11.4)

Comment Sun Oil Company, I-511; Union Oil Company, I-532

Section 11.4 provides for the drilling of a test well to be drilled to a depth sufficient to test a specific formation. Later the requirement is tempered with a maximum depth to which the well must be drilled.

In the initial plan of exploration in unexplored territory, it is questionable whether a formation or depth can be specified considering the present state of knowledge of geothermal resource exploration.

Response

The comments relative to pre-discovery identification of the probable source of geothermal resources are well taken. However, under the circumstances, anticipated objective formation and the minimum depth to which a test well should be drilled still seem to be appropriate means for indicating the minimum requirements which are to be satisfied by exploratory drilling operations under the unit agreement.

Section 271.12, Article XI (11.6)

Comment Union Oil Company, I-532

Since the extension period that may be granted by the Supervisor is limited to one period, the Supervisor should not be confined to one four-month extension, but should be allowed to grant any reasonable extension of time.

Response

The limitation placed upon the Supervisor's authority to grant extensions is limited to extensions relating to wells required under the initial Plan of Operations. Since the timing of the drilling of wells provided for in the initial Plan of Operations may be expected to be a significant factor in the determination that unitization should be approved, it seems appropriate to incorporate limiting language in Section 11.6 to forewarn unit proponents and other parties to the unit agreement of the importance placed upon the minimum exploratory drilling obligation being assumed under the unit agreement. It seems especially important that the exploratory drilling obligations contained in the initial Plan of Operations be recognized by proponent as firm commitments which it will be expected to fulfill.

Section 271.12, Article XI (11.7)

Comment Sun Oil Company, I-511; Union Oil Company, I-532

This provision deals with "actual production" of unitized substances and the penalties attached thereto. Due to the nature of the geothermal industry and the long period of time between discovery, completion of power-generating facilities and "actual production," we feel that the requirement of "actual production" is too rigorous. We submit for consideration "actual production" be changed to "capable of production in paying quantities."

Response

The "actual production" envisioned in this section is the production of geothermal resources which are immediately utilized in a beneficial manner, such as through operation of a plant. Since the primary reason for the leasing of geothermal resources is to permit their utilization in a beneficial manner, it seems appropriate to tie the benefits derived from the continuance of a unit agreement to approved, diligent, and responsible operations by the unit operator.

The substitution of "capable of production in paying quantities," a phrase appropriate to oil and gas operations under the Mineral Leasing Act, does not seem appropriate to operations under the Geothermal Steam Act which requires utilization of the leased resources.

Section 271.12, Article XII (12.1)

Comment Environmental Protection Agency, I-64

Must a "participating area" lie completely within a "unit area?"
Must it lie within an area designated under Section 271.3?

Response

A "participating area" may not include lands outside a "unit area" since the unit agreement is limited in scope to lands within the unit area. Since the area designation under Section 271.3 precedes unitization, a "participating area" must be within an area designated under Section 271.3. However, said designation may be effectively altered by appropriate approvals granted under Article IV.

Section 271.12, Article XII (12.7)

Comment Texaco, Inc., I-514

Recommend addition of following paragraph as Section 12.7 to provide for possibility of subcommercial well as per Oil and Gas Unit Regulations:

"Whenever it is determined, subject to the approval of the Supervisor, that a well drilled under this agreement is not capable of production in paying quantities and inclusion of the land on which it is situated in a participating area is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be allocated to the land on which the well is located unless such land is already within the participating area established for the pool or deposit from which such production is obtained. Settlement for working interest benefits from such a well shall be made as provided in the unit operating agreement."

Response

The proposed language suggested for incorporation as a new Section 12.7 has long been used and has proved to be appropriate for use in agreements unitizing oil and gas resources under the provisions of the Mineral Leasing Act. However, the Geothermal Resources Act and the resources leased thereunder differ significantly from the Mineral Leasing Act and the mineral resources covered thereunder. In view of such differences, the proposed language does not seem appropriate for use in agreements that would pool geothermal resources.

Section 271.12, Article XIV

Comment Union Oil Company, I-532

This Article deals with situations that should be included in an operating agreement and we feel should be totally eliminated from the unit agreement.

Response

This Article is a necessary part of the unit agreement since it deals directly with the commitment of interests and lands to the unit agreement, insures effective control of the operations within the participating area, and helps to protect equities once lands and interests are committed to an agreement.

Section 271.12, Article XIV (14.2)

Comment Environmental Protection Agency, I-64

This section is difficult to understand. What is it that can be "surrendered?" Is the "relinquishment" mentioned in the second proviso the same as "surrender," or the same as the "relinquishment" mentioned in Section 14.1? To what does "such land" refer?

Response

The term "relinquishment" is associated with Federal leases, while the term "surrender" is associated with non-Federal leases. "Such lands" refers to the geothermal interests in lands "surrendered."

Section 271.12, Article XIV (14.1, 14.2)

Comment Texaco, Inc., I-514

Delete phrase beginning with "provided" at the end of Section 14.1 and the phrase beginning with "and further provided" at the end of Section 14.2 and add the following new paragraph to each section:

"SURRENDER. Nothing in this agreement shall prohibit the exercise by any working interest owner of the right to surrender vested in such party by any lease, sublease, or operating agreement as to all or any part of the lands covered thereby, provided that each party who will or might acquire such working interest by such surrender or by forfeiture as hereafter set forth, is bound by the terms of this agreement."

This will allow the right of working interest owners to make a surrender without prior written approval of the Director and conform to the Oil and Gas Unit Regulations.

Response

It is believed that the provisions of these sections are necessary to adequately provide for effective disposition and control of relinquished or surrendered interests in lands committed to the unit agreement. The approval by the Director prior to relinquishment of interests in Federal leases seems appropriate for leased lands that fall within the participating area.

Section 271.12, Article XIV (14.3)

Comment Environmental Protection Agency, I-64

Line 3 should read " . . . such owner or lessor . . . "

Response

It is our opinion that it is preferable to use the terms "fee owner or lessor."

Section 271.12, Article XIV (14.1 through 14.6)

Comment Sun Oil Company, I-511

Article XIV - Relinquishment of Leases, deals with situations which are properly a part of an Operating Agreement which should be agreed to by the Working Interest Owners, e.g.:

1. Section 14.1 and 14.2 - the right to relinquish an interest;
2. Sections 14.3 and 14.4 - the establishment of obligations, liabilities and compensation for a fee owner;
3. Section 14.5 - provides for accounting between the parties;
4. Section 14.6 - terms of an operating agreement.

Response

This article is necessary since it deals directly with the continued commitment of interests and lands to the unit agreement, insures effective control of the operations within the participating area, and protects equities once lands and interests are committed. All parties (lessors, lessees, and working interest owners) execute the unit agreement whereas only the working interest owners execute the unit operating agreement and for this reason it seems preferable that the provisions of this article be included in the unit agreement.

Section 271.12, Article XV (15.1)

Comment American Thermal Resources, Inc., I-164

This section provides for payment of delay rentals for portions of leased land within the unit but without a participating area. As in the objection to Section 4.2, this may be in direct contradiction to the lease agreement entered into by a working interest owner and a landowner; e.g., many leases provide that when royalties commence, either from wells located on the leased land or from wells pooled with the leased land, no rental payments are due or payable thereafter. We

object to this provision and suggest the following language in Section 15.1 be eliminated: ". . . be deemed to accrue as to the portion of the lease not included within a participating area and . . ."

Response

This section specifically applies to those leases where a drilling commitment is required on the leasehold or payment of rentals are due for the privilege of deferring drilling. It is our opinion that this section is within keeping with such lease terms regardless of whether a portion of the lease receives an allocation of production but no drilling has actually occurred on the leased lands.

Section 271.12, Article XVI (16.1)

Comment Gulf Oil Company, I-363; Texaco, Inc., I-514

Change from 30 to 90 days.

Response

It is our opinion that 30 days following notice of proposed operations provide adequate time for the unit operator to determine whether or not it is willing to drill a well. We believe 90 days would be excessive and might unduly delay desirable drilling operations.

Section 271.12, Article XVII (17.1, 17.10)

Comment Environmental Protection Agency, I-64

There is a question of legality with these provisions as it is not clear where DOI gets the authority to alter leases to which the Federal Government is not a party.

Response

All the parties of interest must execute the unit agreement in order to fully commit a tract to the unit agreement. Therefore, by executing the unit agreement, all parties are approving the terms of the unit agreement which specifically amends each lease, Federal and non-Federal, committed thereto. Presumably, the parties to a lease can amend it by executing an amendatory contract (unit agreement). It should be remembered that this is a sample form of unit agreement and, if necessary and acceptable to all parties, specific sections can be amended to meet the needs of a given case.

Section 271.12, Article XVII (17.10)

Comment American Thermal Resources, Inc., I-164; Gulf Oil Company, I-363

Recommend deletion of this section.

Response

A language change has been made which should resolve any problem connected with the segregation of non-Federal leases, a divided portion of which is committed to a Unit agreement; however, it is possible that a unit agreement will be in direct contradiction to lease agreements between lessees and lessors.

Comment Texaco, Inc., I-514

To conform to Oil and Gas Unit Regulations permitting two-year extension on segregated leases, add:

"Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the lands committed and the lands not committed as of the effective date of unitization: Provided, however, that any such lease as to the nonunitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as geothermal resources are produced in paying quantities."

Response

The language Texaco proposes for addition to Section 17.10 is unique to the Mineral Leasing Act. Neither the Geothermal Resources Act nor the leasing regulations issued thereunder provide for the extension of segregated portions of Geothermal Resources leases which are committed only as to a divided portion to a unit agreement.

Section 271.12, Article XVIII (18.1a)

Comment Sun Oil Company, I-511

Article XVIII establishes a term of five years. In view of the nature of geothermal operations, the time necessary to drill sufficient wells to supply a plant and the actual building of the plant would seem to dictate that the term either be extended more than five years or the requirement that "Unitized Substances are produced or utilized in commercial quantities" be made less restrictive and emphasis placed on

the fact that steam had been discovered and that operations were proceeding toward the building of a plant.

Response

Article XVIII, Section 18.1(a) provides for extension of the five-year term of the unit agreement and, in our opinion, adequately provides for the approval of extensions when justified by circumstances that develop toward the end of the five-year term. The requirement that unitized substances be "produced and utilized in commercial quantities" in order to extend the term of the unit agreement is consistent with the provisions of the Act relative to the extension of Geothermal Resource leases. Use of less restrictive language might result in unnecessary confusion regarding extensions of the terms of unitized leases.

Section 271.12, Article XVIII (18.16, 18.2)

Comment Texaco, Inc., I-514

Section 18.1(b), Substitute "paying" quantities for "commercial" quantities. Section 18.2, substitute "75 percent" for "a majority." This clarifies these sections and ties to the Oil and Gas Unit Regulations.

Response

"Commercial quantities" is defined in the Geothermal Resources operating regulations. Use of a different, undefined term such as "paying quantities" could be expected to cause confusion and does not seem necessary nor desirable.

Comment Union Oil Company, I-532

Suggest that the following be inserted in the last line of this provision between "quantities" and "or:"

(production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than 15 years from the date of this agreement).

Response

To include an extension of the agreement for 15 years would not be in accordance with the provisions of the Act (Section 6(d)). Section 18.1(a) permits extension of the term of the unit agreement when

justified. No useful purpose would seem to be served by the incorporation of language extending the term of a non-producing unit agreement under which a discovery has been had and a sale contract signed, to 15 years from the effective date of the unit agreement since, in the absence of actual production, unitized leases would expire no later than 15 years after the effective dates of such leases, dates which of necessity precede, in most instances, the effective date of unitization.

Section 271.12, Article XX (20.1)

Comment Texaco, Inc., I-514

Insert "or of any law of the State wherein said unitized lands are located" after "United States."

Response

The appropriate language modification has been made.

Section 271.12, Article XXI (21.1)

Comment Texaco, Inc., I-514

Add word, "State," after "Federal" in tenth line.

Response

There is no need to add "State" since "or the applicable laws" would include applicable State laws.

Section 271.12, Article XXV (25.1)

Comment Sun Oil Company, I-511; Union Oil Company, I-532

Feel that the term "substantial interest" should be defined.

Response

It is necessary from an administrative standpoint to retain yet not define the term "substantial interest." This is an instance when each case has to be decided upon its own unique circumstances.

Section 271.12, Article XXVIII (28.1)

Comment Texaco, Inc., I-514

To relieve Unit Operator of unreasonable responsibility as is the case in Oil and Gas Unit Regulations, add following paragraph:

"Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder."

Response

The suggested change is not considered necessary nor desirable. Should future operations demonstrate a need for modification of this section, appropriate modification can be approved which should more properly answer specific needs created by specific circumstances.

Section 271.12, Article XXIX (29.2)

Comment Texaco, Inc., I-514

Add the following new sentence before the sentence beginning with "No taxes . . ."

"The working interest owners may currently retain and deduct sufficient of the unitized substances or derivative products, or net proceeds thereof from the allocated share of each royalty owner to secure reimbursement for the taxes so paid."

This will also conform to Oil and Gas Unit Regulations.

Response

The suggested change is not considered necessary nor desirable. The unit agreement is not the proper vehicle for establishing responsibilities that are appropriate to lease contracts. In other words, if a lease does not permit the working interest owner to withhold production to secure reimbursement for taxes, it does not seem proper to use a unit agreement as a vehicle for creating such authority.

Appendix G

Vapor Dominated Hydrothermal Systems
Compared with Hot-Water Systems

by

D. E. White, L. J. P. Muffler, and A. H. Truesdell

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Vapor-Dominated Hydrothermal Systems Compared with Hot-Water Systems¹

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Abstract

Vapor-dominated ("dry-steam") geothermal systems are uncommon and poorly understood compared with hot-water systems. Critical physical data on both types were obtained from U. S. Geological Survey research in Yellowstone Park. Vapor-dominated systems require relatively potent heat supplies and low initial permeability. After an early hot-water stage, a system becomes vapor dominated when net discharge starts to exceed recharge. Steam then boils from a declining water table; some steam escapes to the atmosphere, but most condenses below the surface, where its heat of vaporization can be conducted upward. The main vapor-dominated reservoir actually is a two-phase heat-transfer system. Vapor boiled from the deep (brine?) water table flows upward; most liquid condensate flows down to the water table, but some may be swept out with steam in channels of principal upflow. Liquid water favors small pores and channels because of its high surface tension relative to that of steam. Steam is largely excluded from smaller spaces but greatly dominates the larger channels and discharge from wells. With time, permeability of water-recharge channels, initially low, becomes still lower because of deposition of carbonates and CaSO_4 , which decrease in solubility with temperature. The "lid" on the system consists in part of argillized rocks and CO_2 -saturated condensate.

Our model of vapor-dominated systems and the thermodynamic properties of steam provide the keys for understanding why the major reservoirs of The Geysers, California, and Larderello, Italy, have rather uniform reservoir temperatures near 240°C and pressures near 34 kg/cm^2 (absolute; gases other than H_2O increase the pressures). Local supply of pore liquid and great stored heat of solid phases account for the physical characteristics and the high productivity of steam wells.

We suggest that vapor-dominated systems provide a good mechanism for separating volatile mercury from all other metals of lower volatility. Mercury is likely to be enriched in the vapor of these systems; the zone of condensation that surrounds the uniform reservoir is attractive for precipitating HgS .

A more speculative suggestion is that porphyry copper deposits form below the deep water tables hypothesized for the vapor-dominated systems. Some enigmatic characteristics of these copper deposits are consistent with such a relationship, and warrant consideration and testing.

Introduction

ALTHOUGH hot springs throughout the world have been studied for centuries, direct knowledge of their subsurface relationships was lacking until commercial and research drilling was initiated in the 20th Century. With a few notable exceptions (Allen and Day, 1927; Fenner, 1936) little significant scientific data were available prior to 1950.

Efforts to produce electricity from natural steam were first successful in the Larderello region of Italy, starting about 1904. Drilling from 1910 to 1925 showed that large quantities of natural steam could also be obtained at The Geysers in California, but economic development was not feasible until 1955. At both The Geysers and Larderello, wells deeper

than a hundred meters or so² and near centers of surface activity were found to yield slightly superheated steam (Burgassi, 1964). Some wells on the borders of the active systems³ produced hot water

² The metric system is used throughout this paper. Some readers may find useful the following conversion factors:

Length: $1\text{ m} = 3.281\text{ ft}$; $1\text{ km} = 3,281\text{ ft} = 0.6214\text{ mi}$.

Temperature: $(^\circ\text{C} \times 9/5) + 32 = ^\circ\text{F}$.

Pressure: $1\text{ kg/cm}^2 = 0.9678\text{ atm} = 0.9807\text{ bars} = 14.22\text{ psi}$. All pressures absolute, with 0.78 kg/cm^2 added to gage pressure for Yellowstone Park, and 1.03 kg/cm^2 added to gage pressure at sea level and geothermal areas at low altitudes.

Heat: $1\text{ cal} = 3.9685 \times 10^{-3}\text{ BTU}$; $1\text{ cal/gm} = 1.80\text{ BTU/lb}$.

³ A geothermal system includes a source of heat within the earth's crust (regional heat flow or local igneous intrusion) and the rocks and water affected by that heat. When geothermal systems involve circulating waters, they are also

¹ Publication authorized by the Director, U. S. Geological Survey.

and steam in noncommercial quantities and pressures (Allen and Day, 1927, p. 82); the characteristics of such wells have not yet been adequately described.

From 1946 to 1970 approximately 100 geothermal systems throughout the world were explored at depth by drilling. Initially, the objective of this search was to discover areas yielding dry steam, as at Larderello and The Geysers. This effort, however, soon revealed that most hot-spring systems yield fluids that are dominated by hot water rather than by steam.

New Zealand first demonstrated that a source of dry steam was not essential for the generation of geothermal power. At Wairakei, subsurface hot water at temperatures up to 260°C is erupted through wells to the surface; some of the water flashes to steam as temperature and pressure decrease to the operating pressure, commonly from 3 to 6 kg/cm². This steam, generally 10 to 20 percent of the total mass flow, is separated from the residual water and directed through turbines to generate electricity. The high energy potential of subsurface water has also been demonstrated in Mexico, Iceland, Japan, USSR, El Salvador, the Philippines, and the United States.

A few systems, other than Larderello and The Geysers, yield vapor with little or no associated liquid water. These include the Bagnore and Piancastagnaio fields near Monte Amiata southeast of Larderello (Burgassi, 1964; Cataldi, 1967), and probably the Matsukawa area of northern Honshu, Japan, (Saito, 1964; Hayakawa, 1969; Baba, 1968), the Silica Pit area of Steamboat Springs, Nevada (White, 1968b), and the Mud Volcano area of Yellowstone National Park, considered in this report.

Hot-water systems have attracted nearly all of the research drilling in natural hydrothermal areas. The first two research holes in the world were drilled by the Geophysical Laboratory of the Carnegie Institution of Washington in the hot water systems of Yellowstone Park in 1929-30 (Fenner, 1936), and seven of the eight research holes drilled at Steamboat Springs, Nevada, in 1950-51 (White, 1968b) were in a hot-water system. The eighth was in the small vapor-dominated Silica Pit system, subsidiary to the larger water-dominated area.

Although research drilling by the U. S. Geological Survey in Yellowstone National Park during 1967 and 1968 was aimed mainly at a better understanding of the hot-water systems of the major geyser basins, a specific effort was made to find and drill a vapor-

called hydrothermal systems. The hot part of each hydrothermal system is commonly emphasized, but in its broader meaning the marginal parts involve convective downflow of cold water, and are also included. A hot spring area is the surface expression of a geothermal system and contains hot springs, fumaroles, and other obvious hydrothermal phenomena.

dominated system. The Mud Volcano area was found to be such a system and is described here.

In spite of long and extensive commercial development at Larderello and The Geysers, the origin and nature of the systems that yield dry or superheated steam, and why they differ from the abundant hot-water systems, are not nearly so well understood. Facca and Tonani (1964), for example, seem to deny that Larderello and The Geysers differ significantly from Wairakei, New Zealand, and the other water-dominated areas. Marinelli (1969) states that Larderello is a hot-water area. James (1968) and in less detail Elder (1965) and Craig (1966) have instead proposed that the reservoirs are filled with steam maintained by boiling from a deep water table.

We submit, in agreement with James (1968), that fundamental differences do exist between two main types of natural hydrothermal systems; each type is recognizable by geologic, physical, and geochemical criteria. However, in contrast with James (1968) and others, we consider that steam and water must coexist in the reservoirs of these systems that yield dry steam at the surface.

Acknowledgments

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Summary of Characteristics of Hot-water Systems

Hot-water systems are usually found in permeable sedimentary or volcanic rocks and in competent rocks such as granite that can maintain open channels along faults or fractures. Total discharge from typical systems ranges from several hundred to several thousand liters per minute (lpm), with individual springs commonly discharging a few lpm to several hundreds of lpm. Where near-surface rocks are permeable and the surrounding water table is relatively low, much or all of the circulating hot water escapes below the ground surface, and little or none is discharged from local surface springs. For example, nearly 95 percent of the water at Steamboat Springs, Nevada, escapes in such a way (White, 1968b). On the other hand, where spring outlets are at or below the level of the surrounding water table, all hot water of the system is likely to be discharged in local visible springs.

The spring systems that discharge at low to moderate temperatures are commonly similar chemically

to nearby ground waters, but the near-boiling hot waters of moderate to high discharge are nearly always characterized by relatively high contents of alkali chlorides, SiO_2 , B, and As (table 1, anal. 4, 8, and 10; White and others, 1963, Tables 17 and 18). In confusing contrast, some gassy springs of low discharge may differ greatly from these chloride-rich waters in physical and chemical characteristics. Surrounding ground is commonly bleached and hydrothermally altered to a porous siliceous residue that may be mistaken for hot-spring sinter. The bleached ground may contain native sulfur, white, yellow, and orange sulfate minerals, and clay minerals, especially kaolinite; vegetation is generally sparse or absent. Chemical analyses of such springs (table 1, anal. 9; White and others, 1963, table 20) contrast strikingly with those of higher discharge; chloride is generally less than 20 ppm, sulfate is the dominant anion, pH is usually between 2.5 and 5, and Fe, Al, Ca, and Mg are abundant relative to Na and K.

Where these two contrasting types of springs coexist in the same general area, topographic relationships and results of shallow drilling and augering indicate that the nearly neutral to alkaline chloride springs are from the main water body, occurring where the water table intersects the ground surface. Where the water table is low, acid springs may result from boiling at this water table. Some steam condenses in cooler ground and in pools of rain water, perched ground, and previously condensed steam.

H_2S that evolves with the steam reacts near the surface with atmospheric oxygen to form sulfuric acid, thus accounting for the high sulfate contents and the low pH's characteristic of these waters. Bacterial oxidation of intermediate forms of sulfur may be involved (Schoen and Ehrlich, 1968). The acid dissolves available cations from the surrounding rocks, which are adequate sources for the reported constituents (White and others, 1963, table 20).

The geochemistry of chloride is critical in understanding the differences between the coexisting neutral-chloride and acid-sulfate waters, as well as the differences between vapor-dominated systems and hot-water systems. Most metal chlorides are highly soluble in liquid water, and the low content of Cl in most rocks can be selectively dissolved in water at high temperatures (Ellis and Mahon, 1964, 1967). The common metal chlorides, however, have negligible volatility and solubility in low-pressure steam (Sourirajan and Kennedy, 1962; Krauskopf, 1964). The only chlorides with sufficient volatility to account for significant transfer of Cl in steam at low temperatures and pressures are HCl and NH_4Cl , both of which are minor constituents of most hot-spring systems. The very low Cl content of the perched acid-

springs associated with some hot-water systems is thus consistent with near-surface attainment of acidity from oxidation of H_2S , rather than by vapor transfer of HCl from initially acid sources.

The temperatures of many explored hot-water systems increase with depth to a "base" temperature (Bodvarsson, 1964a, 1970) that differs with each system that has been drilled deep enough. Temperatures at Wairakei, New Zealand, rise to a maximum of 260°C near 450 m of depth but increase little if any more at further explored depths (Banwell and others, 1957, p. 52-56), and at Steamboat Springs, Nevada, the temperatures in six drill holes were near 170°C at depths close to 100 m, but deeper drilling found no higher temperatures even though major channels were intersected below 150 m (White, 1968b). In such an area, meteoric water (Craig, 1963; White, 1968b) evidently penetrates to considerable depths along permeable channels of a huge convection system; the water is heated to its base temperature by rock conduction, perhaps augmented slightly by magmatic steam. It then rises in the core of the spring system, losing only a little heat because of its relatively high rate of upflow through wallrocks of low thermal conductivity. As the hot water rises the hydrostatic pressure decreases, and eventually a level is attained where pressure is low enough for boiling to begin.

Of about one hundred hot-water systems throughout the world that have now been explored by drilling, fewer than 30 are known to exceed 200°C in temperature and only about 10 demonstrably exceed 250°C . The liquid of the two reservoirs known to exceed 300°C is brine rather than relatively dilute water. The Salton Sea system has about 250,000 ppm of dissolved salts and a maximum temperature of about 360°C (Helgeson, 1968). The Cerro Prieto system, about 90 km to the south in Baja California, Mexico, has a salinity of about 17,000 ppm and temperatures as high as 388°C (Mercado, 1969).

Hot-water systems have a high potential for self-sealing (Bodvarsson, 1964b; Facca and Tonani, 1967) by means of deposition of minerals in outlet channels. SiO_2 is the most important constituent for the self-sealing of high-temperature systems because quartz is so abundant and its solubility increases so much with temperature (Fournier and Rowe, 1966). Quartz dissolves rather rapidly at high temperatures; when quartz-saturated waters are cooled, quartz precipitates rather readily down to about 180°C but with increasing sluggishness at lower temperatures. The SiO_2 content of many waters, after cooling, greatly exceeds the solubility of quartz and may even exceed the solubility of amorphous SiO_2 . Near the surface where temperatures are near or below

Table 1.--Chemical analyses of waters associated with vapor-dominated and hot-water geothermal systems

Name	1/ The Geysers	2/ The Geysers	3/ GS-7	4/ Spring 8	5/ Mud Volcano	6/ Mud Volcano	7/ Y-11, Mud Volcano
Location	Calif.	Calif.	Steamboat, Nev.	Steamboat, Nev.	Yellowstone, Wyo.	Yellowstone, Wyo.	Yellowstone, Wyo.
Water type	HCO ₃ -SO ₄	Acid-sulfate	HCO ₃ -SO ₄	Cl-HCO ₃	Acid-sulfate	HCO ₃ -SO ₄	HCO ₃ -SO ₄
System type	Vapor-dom.	Vapor-dom.	Vapor-dom.	Hot water	Vapor-dom.	Vapor-dom.	Vapor-dom.
SiO ₂	66	225	14	293	540	215	
Al		14		0.5	146		
Fe		63		0.05	17		
Mn		1.4		0.05			
As				2.7			
Ce	58	47	6.3	5.0	14	28.7	28
Mg	108	281	0	0.8	11	16.4	0.47
Na	18	12	9.3	653	16	74.3	105
K	6	3	4.5	71	17	47.5	12.6
Li			0	7.6		.20	.18
NH ₄	111	1,400		<1	26	.18	3.2
H		9.5			43		
HCO ₃	176	0	21	305		298	258
CO ₃	--	--	--	--	--	--	
SO ₄	766	5,710	24	100	3,149	65.3	74
Cl	1.5	0.5	0.3	865	Tr.	13.3	9.6
F			0	1.8	1	2.0	
Br				0.2			
NO ₃			Tr.	--			0.2
B	15	3.1	1.3	49		.6	0.1
N ₂ S	0	--	2.4	4.7	0		
Total reported	1,330	7,770	83	2,360	3,980	761.7	491.4
pH	neutral	1.8+	6.5	7.9	Strong acid	7	8.5(?)
Temperature °C	100	Boiling?	161	89.2	65	58.5	131.7

1/ Witches Cauldron, White and others, 1963, p. F47, modified from Allen and Day, 1927.
2/ Devils Kitchen, White and others, 1963, p. F46, modified from Allen and Day, 1927.
3/ White and others, 1963, p. F47. Condensate in apor-filled hole.
4/ . . . Do p. F40.
5/ Allen and Day, 1935, p. 427; described as "Big Sulphur Pool" 0.3 km N of Mud Volcano; location indicates Old Sulphur Cauldron of fig. 4, 60 m SSW of Y-11 drill hole.
6/ Spring discharging from sinter, E. bank of Yellowstone River 0.5 km SE of Y-11 drill hole; has deposited sinter in recent past, if not now. Analyzed by Mrs. Roberts Bernes.
7/ Erupted from Y-11 drill hole Sept. 22, 1969 after hole had caved to 28 m depth (table 1); collected by R. O. Fournier, analysis by Mrs. Roberts Bernes. pH not representative of in-hole environment because of CO₂ loss, storage in plastic with clays.

Note: The word apor should read vapor in footnote 3.
Reference to Table 1 in footnote 7 should read Table 4.

100° C, the excess silica in such waters may precipitate as chalcedony, opal, and cristobalite (White and others, 1956). Self-sealing by silica minerals is likely to be slight in hot-water systems that do not exceed 150° C, but as maximum temperatures increase above this value, the potential for self-sealing increases greatly. Calcite, zeolites, and some other hydrothermal

Table 1.--Chemical analyses of waters associated with vapor-dominated and hot-water geothermal systems (continued)

Name	8/ Norris Basin	9/ Norris Basin	10/ Well 4	11/ Well 5	12/ Cerboli A,	13/ Well MR-1
Location	Yellowstone, Wyo.	Yellowstone, Wyo.	Wairakei, N.Z.	Wairakei, N.Z.	Italy	Matukewae, Jeon
Water type	Cl(HCO ₃)	Acid sulfate	Cl	HCO ₃ SO ₄	SO ₄ HCO ₃ (Cl)	SO ₄ (HCO ₃)
System type	Hot water	Hot water	Hot water	Vapor-dom. (?)	Hot water	Vapor-dom. (?)
SiO ₂	529	109	386	191		635
Al		2.4			Trace	29
Fe		0.8			Trace	508
Mn						
As	3.1					
Ce	5.8	2.2	26	12		
Hg	0.2	0	<0.1	1.7	5.0	8.7
Na	439	2.0	1,130	230	56.6	264
K	74	3.0	146	17	32.0	144
Li	8.4		12	1.2		
NH ₄	0.1	30	0.9	0.2	19.0	
H		14				
HCO ₃	27	--	35	670	89.7	37
CO ₃	--	--	0(?)			
SO ₄	38	758	35	11	137.4	1,780
Cl	744	15	1,930	2.7	42.6	.12
F	4.9		6.2	3.7		
Br	0.1					
NO ₃	--					
B	12	6.9	26	0.5	13.9	61.2
H ₂ S	.0		1.1	0		Trace
Total reported	1,890	943	3,750	1,140	396.2	3,478.9
pH	7.5	1.97	8.6	6.7		4.9
Temperature °C	84.5	90	228+	High	~300	~240

8/ Dr. Morey's Porkchop, 60 m southwest of Pearl Geysir (White and others, 1963, p. F40).

9/ Locomotive Spring, 55 m WSW of Norris Basin drill hole of Fenner (1936); seeping discharge (White and others, 1963, p. F46).

10/ Typical of shallow Wairakei system; 375 m deep with maximum temperature of 245°C (Benwell and others, 1957). Analysis by Wilson; also contains 11 ppm from CO₂ (Wilson, 1955; quoted in White and others, 1963, p. F40).

11/ Western part of Wairakei field (Wilson, 1955, quoted in White and others, 1963, p. F47). Similar to some waters of vapor-dominated systems; 467 m deep, maximum 217°C at 271 m.

12/ Deepest well of hot-water field on So. border Larderello steam fields (Cataldi and others, 1969). Orig. anal. in ppm, supplied by R. Cataldi, 1970.

13/ Well 945 m deep, produced steam, some water for 1 year before drying; this anal. while still wet: condensate of steam 50 ppm H₂S and 6.2 ppm S (Nakamura and Sumi, 1967; Hayekawa, 1969).

minerals are also effective in producing self-sealed margins of some hot-water systems, but generally less so than the silica minerals. Self-sealing is likely to be most extensive where temperatures decrease most rapidly. These marginal parts are of secondary interest for production drilling, and they have not been

Table 2.--Analyses of gases associated with vapor-dominated and hot-water geothermal systems, in volume percent

	Total vapor, including H ₂ O		Gases, excluding H ₂ O					
	1/ The Geysers, California	2/ Larderello, Italy	3/ The Geysers, California (1), recalc.	4/ Larderello Italy (2), recalc.	5/ Y-11 Mud Volcano, Yellowstone	6/ Mud Volcano Yellowstone	7/ Y-9, Norris, Yellowstone	8/ Spring Norris Yellowstone
H ₂ O	98.045	98.08						
CO ₂	1.242	1.786	63.5	93.02	98.4	98.90	91.5	97.40
H ₂	0.287	-0.037	14.7	} 1.92	<0.01	0.00	0.9	0.00
CH ₄	0.299		15.3		Tr.	0.10	0.1	0.20
C ₂ H ₆					0.0		0.0	
N ₂	} 0.069	0.0105	} 3.5	0.54	0.8	} 1.00	5.1	} 1.60
A					0.013		0.08	
H ₂ S	0.033	0.049	1.7	2.55	0	0.10	1.4	0.75
NH ₃	0.025	0.033	1.3	1.72				
H ₃ BO ₃	0.0018	0.0075	0.09	0.39				
O ₂					0.2	0.00	1.0	0.05?
Total	100.002	100.003	100.09	100.14	99.42	100.10	100.08	100.00

1/ Well 1, The Geysers (Allen and Day, 1927, p. 76).
2/ Average vapor from producing wells (Burgessi, 1964), recalculated from analysis in gm per kgm; 2,850,000 kg produced per hour; also contains 1 cm³ total rare gases per kg.
3/ Recalculated from 1/, without H₂O.
4/ Recalculated from 2/, without H₂O.
5/ Collected July 10, 1968, by R. O. Fournier, when hole was still open to 316 ft (table 3).
6/ Gas from same spring as anal. 5 of table 1 (Allen and Day, 1935, p. 86).
7/ Collected by R. O. Fournier, Sept. 18, 1969, and analyzed by D. Byrd, U.S. Geol. Survey; gas separated from water; nearest drill hole to springs of anal. 8 and 9, table 1.
8/ Gas from unnamed acid-sulfate spring "near Congress Pool," perhaps Locomotive (table 1, anal. 9). Allen and Day, 1935, p. 86, 469.

Note: Reference to Table 3 in footnote 5 should read Table 4.

cored and studied in much detail except in research drilling in Yellowstone Park (unpublished data).

For similar geochemical reasons, most hot-water systems with subsurface temperatures of 180° C or higher (White, 1967a) have hot springs or geysers that deposit sinter (amorphous silica precipitated on the ground surface by flowing hot water). Waters that deposit sinter nearly always have SiO₂ contents of at least 240 ppm, equivalent to a quartz-equilibration temperature of 180° C. Because the solubility of amorphous SiO₂ is so much higher than that of quartz, a quartz-saturated water at 180° C must cool to about 70° C in order to precipitate amorphous silica. If the water becomes sufficiently concentrated in SiO₂ by evaporation, as on the borders of pools and in erupted geyser water, precipitation can occur at somewhat higher temperatures.

The existence of sinter, as distinct from travertine

(CaCO₃) and siliceous residues from acid leaching, is evidence for a hot-water system with present or past subsurface temperatures of more than 180° C.

Summary of Characteristics of Vapor-dominated ("Dry-steam") Systems

The near-surface rocks of Larderello, Italy, and The Geysers, California, are relatively tight and incompetent, and evidently do not permit large quantities of meteoric water to penetrate deep into their systems (White, 1964). Even in these areas, however, isotopic data indicate that most of the water is of surface origin (Craig and others, 1956; Craig, 1963).

Surface springs at The Geysers⁴ typically have

⁴"The Geysers" is an unfortunate misnomer. The area has never had true geysers, which are restricted to the hot-water systems (White, 1967a).

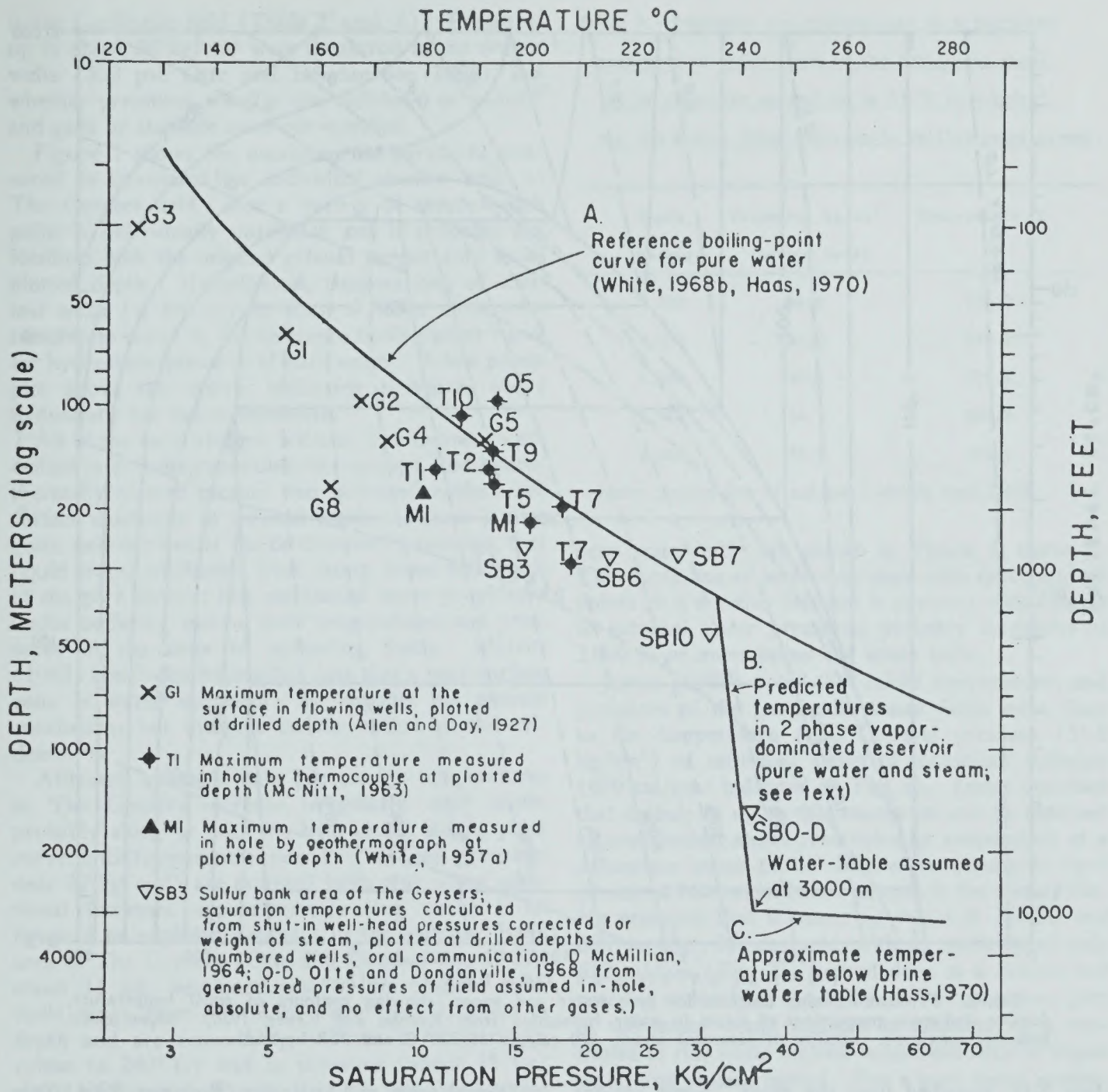


FIG. 1. Measured and calculated temperatures from The Geysers, Calif., with some theoretical curves. The reference boiling-point curve for pure water, curve A, differs in shape from its usual representation because of the logarithmic scale for depth. Note that curves B and C are temperature-deficient and pressure-deficient relative to curve A.

very low discharge, totaling little more than 100 lpm (Allen and Day, 1927). Most of the springs are strongly acidic (pH from 2 to 3). The few neutral springs (Table 1, anal. 1) have chloride contents of less than 2 ppm, similar to local rain water. A careful search of the creek that flows through the area was made on the chance that undetected chloride springs might be seeping into the creek (White, 1957a, p. 1651). However, throughout an area of at least 30 square miles surrounding The Geysers, the

surface and ground waters are no higher in chloride than normal cold streams.

Chloride contents have not been included in reports on natural springs associated with the original vapor-dominated Larderello fields, but available descriptions of spring activity, dominated by mud pots and fumaroles, suggest the presence of sulfate waters low in chloride. However, present springs are not low in pH (R. Cataldi, written commun., 1970), perhaps because of the neutralizing action of abun-

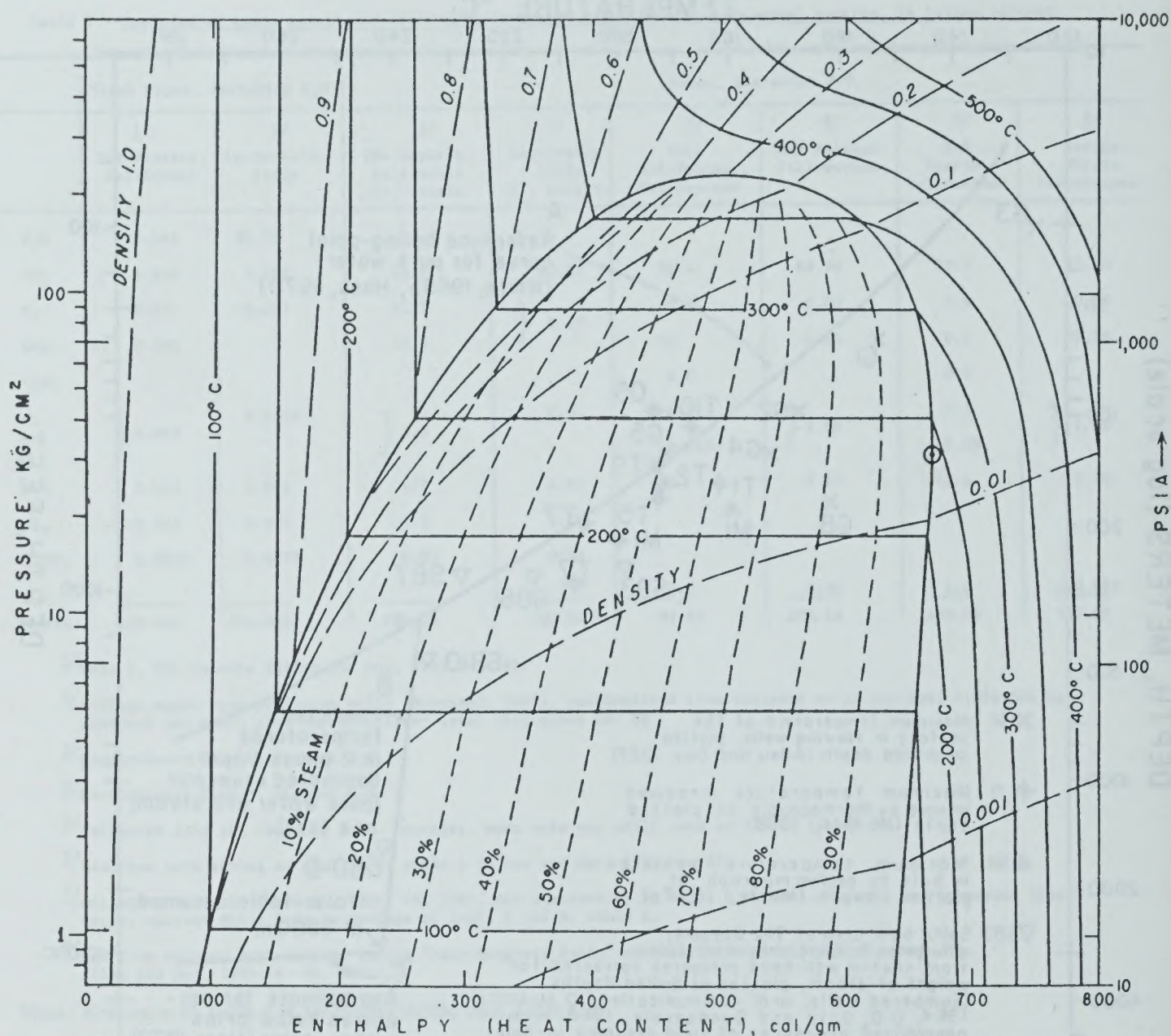


FIG. 2. Pressure-enthalpy diagram for pure water and vapor, showing contours of equal temperature, density, and mass proportions of steam to water (computed from Keenan and Keyes, 1936). Open circle indicates maximum enthalpy of saturated steam, 670 cal/gm at 236° C and 31.8 kg/cm².

dant NH_3 absorbed from the gases. Some springs and wells of the Carboli area just south of the vapor-dominated fields (Cataldi and others, 1969) contain some chloride (42.6 ppm, Table 1). Although this Cl content is not notably high, it is consistent with the abundant water and old travertine which suggest that Carboli is a hot-water system.

In general where surface springs are all low in chloride and subsurface thermal waters are similarly low (< 20 ppm) a vapor-dominated system is indicated. The Cl content of steam is normally less than 1 ppm, but near-surface waters involved in condensation of the steam commonly contain a few ppm of Cl because, with little or no discharge, Cl can be selectively concentrated.

Typical wells at Larderello (Burgassi, 1964) produce dry or slightly superheated steam with 1 to 5 percent of CO_2 and other gases (Table 2, anal. 2). Liquid water evidently occurs in some noncommercial wells on the borders of the fields. Shut-in well-head pressures in typical steam wells tend to increase with depth up to a maximum of about 32 kg/cm² (Penta, 1959; Burgassi, 1964). Increased productivity reported at greater depths evidently is not due to significantly higher initial pressures. Ferrara and others (1963) list the temperatures of two Larderello wells as 251° C, but all other cited wells are 240° C or lower (depths not given).

Typical wells at The Geysers also produce dry or superheated steam containing gases similar to those

in the Larderello field (Table 2, anal. 1). Pressures up to about 35 kg/cm² were measured in the deeper wells (500 psi, Otte and Dondanville, 1968), but whether pressures were at the well-head or in-hole, and gage or absolute were not specified.

Figure 1 shows the maximum temperatures measured or calculated for individual shallow wells in The Geysers field. For a variety of reasons each point is individually unreliable and is probably not identical with the original ground temperature at its plotted depth. Nevertheless, temperatures of shallow wells (< 350 m) do show a rather close relationship to curve A, the reference boiling-point curve for hydrostatic pressure of pure water. A few points plot above this curve, indicating pressures above hydrostatic but below lithostatic.

All of the early shallow wells at The Geysers were drilled in or near fumaroles, hot springs, and hydrothermally altered ground that provided evidence of surface discharge of thermal fluids. Figure 1 suggests, and our model (to be discussed) assumes, that liquid water condensed from rising steam fills much of the pore spaces; this condensed water provides a major buffering control over temperatures and pressures in the zone of upflowing fluids. McNitt (1963) concluded from other data that a near-surface zone is water saturated; we support his general conclusions but disagree on the nature of the evidence.

Although available data are scanty, temperatures at The Geysers increase irregularly with depth, probably along or near the hydrostatic boiling-point curve, until temperatures near 236° C (and pressures near 32 kg/cm²) are attained, with only slight additional increases approximately along curve B of figure 1 to explored depths. In the Sulphur Bank area of The Geysers (Otte and Dondanville, 1968), about 1½ km west-northwest of the original field, wells range from 450 m to more than 2,000 m in depth and are remarkably uniform in temperature (close to 240° C) and in pressure (about 35 kg/cm²), as shown in Figure 1. Otte and Dondanville state that "the fluid exists in the reservoir as superheated steam," but the reported temperatures and pressures indicate approximate saturation. No specific data for individual wells are available.

No data have been published to indicate that wells in the central parts of any vapor-dominated field have penetrated a deep water-saturated zone or a water table. In such a penetration, in-hole pressures should increase downward through the water-filled parts of shut-in wells instead of remaining near 32 kg/cm². This evidently does occur in parts of the Italian fields (R. Cataldi, written commun., 1970), but detailed relationships are not yet available. The expected temperature-depth relationships below the

Table 3.—Pressures and temperatures in a two-phase

reservoir in which steam is the continuous phase.

Top of reservoir assumed to be 236°C 31.8 kg/cm²,

and 360 m deep (from hydrostatic boiling-point curve).

Depth meters	Pressure, kg/cm ² (bottom hole)	Temperature °C
360	31.8	236.0
500	32.0	236.1
1,000	33.5	239.0
1,500	34.3	240.3
2,000	35.1	241.6

Note: Second line of column 3 should read 236.3.

deep water table are shown in Figure 1, curve C. This curve has an increasing slope with depth and all points on it are also deficient in pressure with respect to external water pressures, probably to depths of 2,000 m or more below the water table.

James (1968) noted that initial temperatures and pressures of the Larderello steam fields were close to the temperature (236° C) and pressure (31.8 kg/cm²) of saturated steam of maximum enthalpy (670 cal/gm; indicated on Fig. 2). James reasoned that enthalpies up to this maximum can be obtained in undisturbed steam reservoirs by evaporation at a subsurface water table. Higher temperatures (and pressures) can exist below but not at the water table. He reasoned that if saturated steam at 350° C and 68.7 kg/cm², for example, with an enthalpy of only 612 cal/gm (Fig. 2), formed deep in a system and rose up to levels of lower hydrostatic pressure, part of the steam would increase in enthalpy as it continued to rise while the rest would condense to liquid water and remain behind. For a pure water system, this separation of liquid from vapor continues until the pressure at maximum enthalpy is attained.

The enthalpy of saturated steam near its maximum, however, is not very sensitive to changes in temperature and pressure (Fig. 2). James suggested that the top of a natural vapor-dominated reservoir is likely to have a temperature near 236° C and a pressure near 31.8 kg/cm² but that, because of the weight of steam in a deep reservoir, the temperature near a boiling water table may be as much as 240° C at a pressure near 34 kg/cm². Table 3 shows expected depth-related variations in temperature and pressure of a pure water system in a homogeneous, vapor-dominated reservoir.

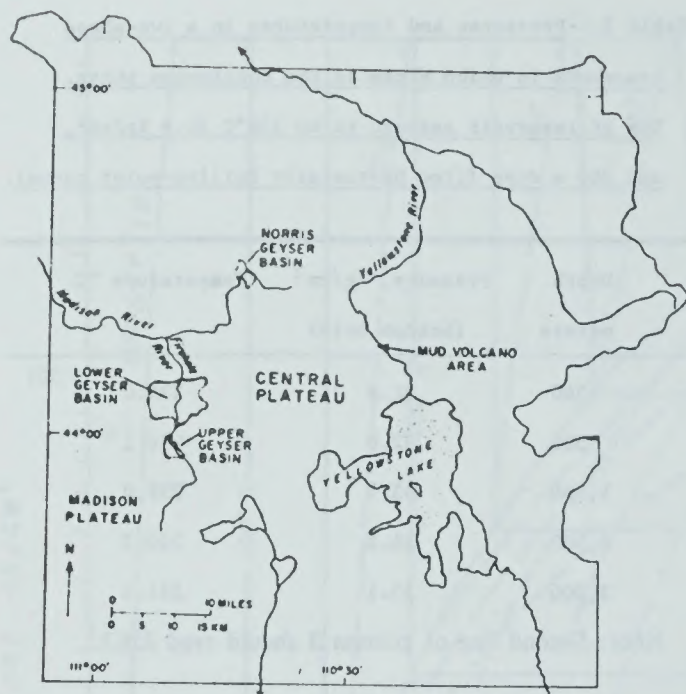


FIG. 3. Index map of Yellowstone National Park, Wyoming, showing location of Mud Volcano area and the major geyser basins.

The scanty available data suggest that temperatures and pressures may exceed the limits suggested by James because of the effects of dissolved salts and the partial pressures of other gases. In addition, although the maximum enthalpy of steam does seem to buffer these systems at temperatures near 236° to 240° C and pressures near 32 to 34 kg/cm², we see no fundamental reason why the available heat supply may not form somewhat more steam than can escape at these pressures through available channels. In this paper we shall assume James' suggested range in temperatures and pressures as the most probable, but we emphasize that more precise data are essential in understanding the detailed characteristics of these systems.

Recorded temperatures of the vapor-dominated reservoirs are significantly lower than in some hot-water fields, which range up to 388° C (Mercado, 1969). The Carboli field on the southern edge of the Larderello steam fields is notable in being the only described field in the Larderello region that produces more water than steam by mass and thus is a hot-water system. Its maximum temperature is about 300° C (Cataldi and others, 1969), which clearly exceeds all temperatures reported from the vapor-dominated areas.

The Mud Volcano Area, Yellowstone Park

General Setting.—The Mud Volcano area is located along the Yellowstone River about 8 km north of Yellowstone Lake (Fig. 3). Bedrock of the area

is rhyolitic ash-flow tuffs erupted approximately 600,000 years ago (R. L. Christiansen and J. D. Obradovich, 1969, written commun.). Glacial gravels and sands of Pinedale age (about 25,000 to 12,000 years B.P.) mantle the bedrock except near the center of the area.

Thermal activity in the Mud Volcano area consists almost entirely of vigorously bubbling mud pots, acid-sulfate springs, and steam vents concentrated on north-northeast lineaments. Total discharge is only about 80 lpm (Allen and Day, 1935, p. 58) from an area of 2½ km². There are no chloride-rich springs like those of the major geyser basins, even along the Yellowstone River, which is the local base level for the water table of the area. Instead, acid-sulfate and nearly neutral bicarbonate-sulfate springs occur along the river (anal. 5 and 6, Table 1). A little silica is being deposited by evaporation from algal mats at two of these nearly neutral springs, and opal-cemented Holocene alluvium is common along the riverbanks. Although none of the present springs has enough silica to deposit hard sinter from flowing water on the surface (generally requiring at least 240 ppm SiO₂), three small areas of old sinter occur as much as 3 m above river level. This indicates that sometime in the past 12,000 years silica-rich water, presumably also rich in chloride, discharged at the surface in the Mud Volcano area.

Acid-sulfate springs similar in discharge and chemistry to the Mud Volcano springs occur locally where H₂S is abundant in high ground of the major Yellowstone geyser areas (anal. 9, Table 1). However, in contrast to drill hole Y-11 in the Mud Volcano area (anal. 7, Table 1), all drill holes in the geyser basins tapped water rich in chloride and similar to waters from the geysers and the principal flowing springs (anal. 8, Table 1).

Y-11 was drilled by the U. S. Geological Survey at the north end of the Mud Volcano area, 75 m north-northeast of Old Sulphur Cauldron. Figure 4 shows the locations of the hole and the "tree line," inside of which trees do not grow because temperatures are too high. Also shown are two heat-flow contours mapped by snowfall calorimetry (White, 1969). The 900 µcal/cm² sec (microcalories per sq cm per second) contour is probably within 20 percent of the existing total conductive and convective heat flow. This heat flow is about 600 times the world-wide average conductive heat flow of the earth (Lee and Uyeda, 1965). The 5,000 µcal contour is less precisely located, but total heat flow obviously increases rapidly southeast from Y-11 drill hole.

Near-surface Ground Temperatures.—Relationships between heat flow, depth, and temperature determined in shallow auger holes near Y-11 clarify some principles of major significance to the vapor-

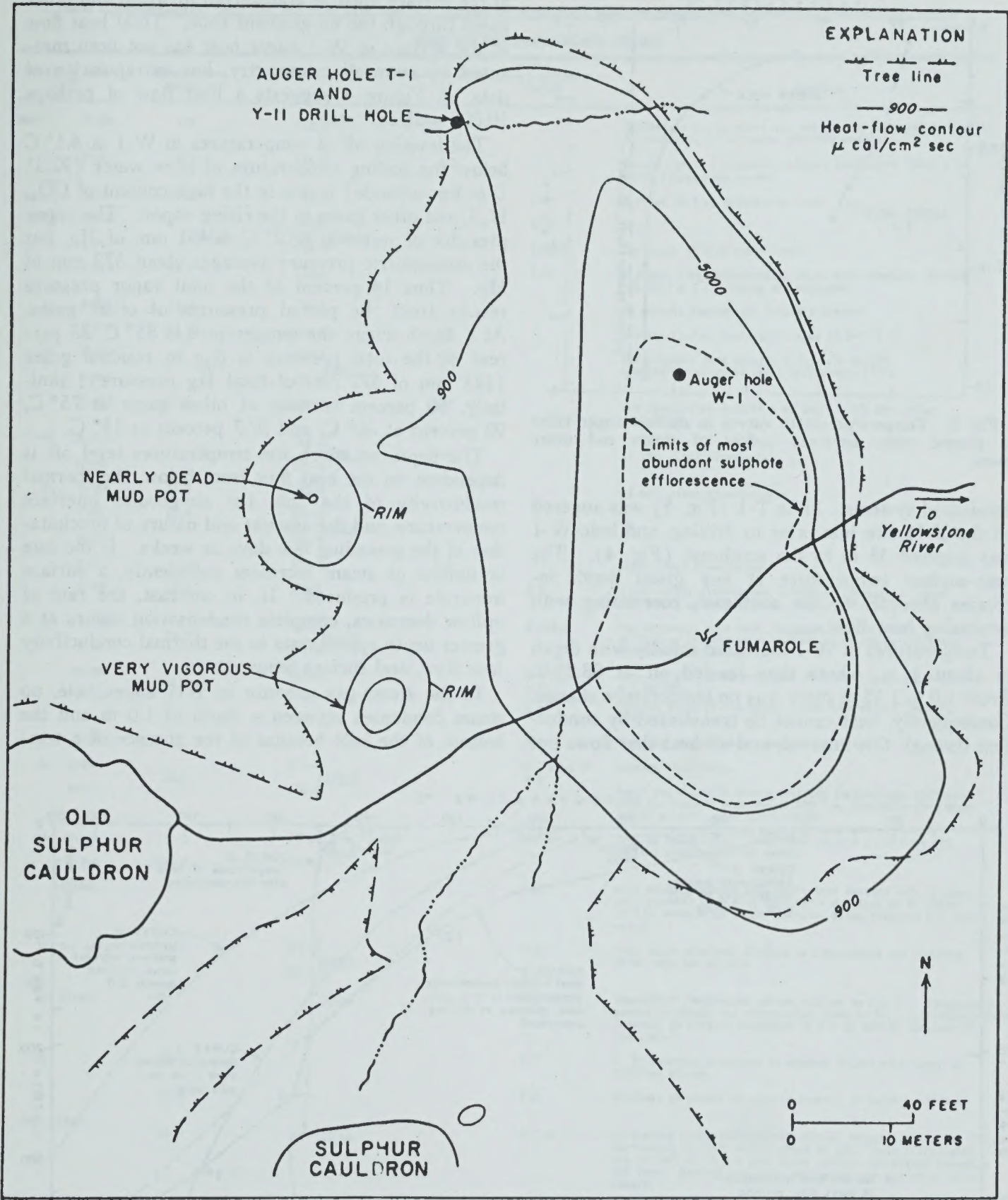


FIG. 4. Sulphur Cauldron area, north end of Mud Volcano area, showing location of Y-11 drill hole relative to heat flow and other features.

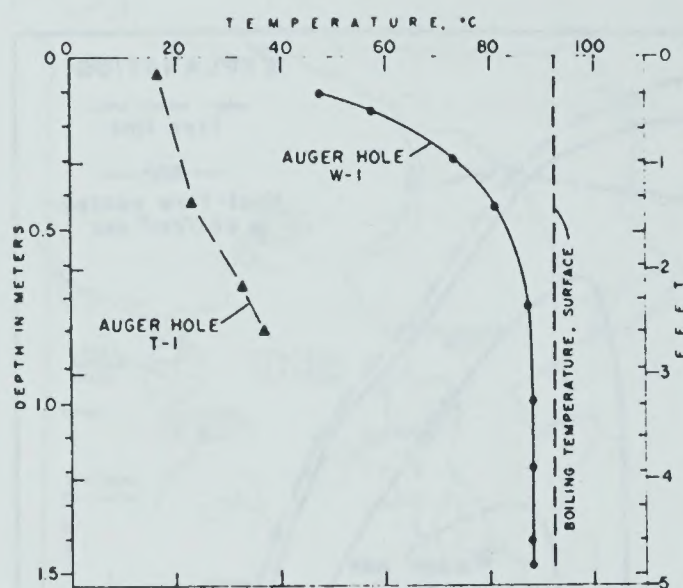


FIG. 5. Temperature-depth curves in shallow auger holes in ground with dispersed upflow of steam and other gases.

dominated systems. Hole T-1 (Fig. 5) was augered on the Y-11 site just prior to drilling, and hole W-1 was augered 35 m to the southeast (Fig. 4). The near-surface temperature at any given depth increases abruptly to the southeast, correlating with increasing heat flow.

Temperatures in W-1 increased rapidly with depth to about $\frac{3}{4}$ m, where they leveled off at 88.2° C. From 1.0 to 1.55 m there was no temperature change. Consequently, heat cannot be transferred by conduction through this interval, and *all* heat that flows out

at the surface must be transferred in steam and other gases through the no-gradient zone. Total heat flow at the surface of W-1 auger hole has not been measured by snowfall calorimetry, but extrapolation of data on Figure 4 suggests a heat flow of perhaps 10,000 $\mu\text{cal}/\text{cm}^2 \text{ sec}$.

The leveling off of temperatures in W-1 at 4.1° C below the boiling temperature of pure water (92.3° C at this altitude) is due to the high content of CO_2 , H_2S , and other gases in the rising vapor. The vapor pressure of water at 88.2° C is 491 mm of Hg, but the atmospheric pressure averages about 572 mm of Hg. Thus 14 percent of the total vapor pressure results from the partial pressures of other gases. At a depth where the temperature is 85° C, 25 percent of the total pressure is due to residual gases (143 mm of 572 mm of total Hg pressure); similarly, 50 percent consists of other gases at 75° C, 90 percent at 40° C, and 97.7 percent at 15° C.

The depth at which the temperatures level off is dependent on the heat flux from below, the thermal conductivity of the soil, the air-ground interface temperature, and the amount and nature of precipitation of the preceding few days or weeks. If the rate of upflow of steam increases sufficiently, a surface fumarole is produced. If, in contrast, the rate of upflow decreases, complete condensation occurs at a greater depth appropriate to the thermal conductivity heat flow, and surface temperature.

In the steam-gas mixture in W-1 auger hole, no steam condenses between a depth of 1.0 m and the bottom of the hole because of the absence of a tem-

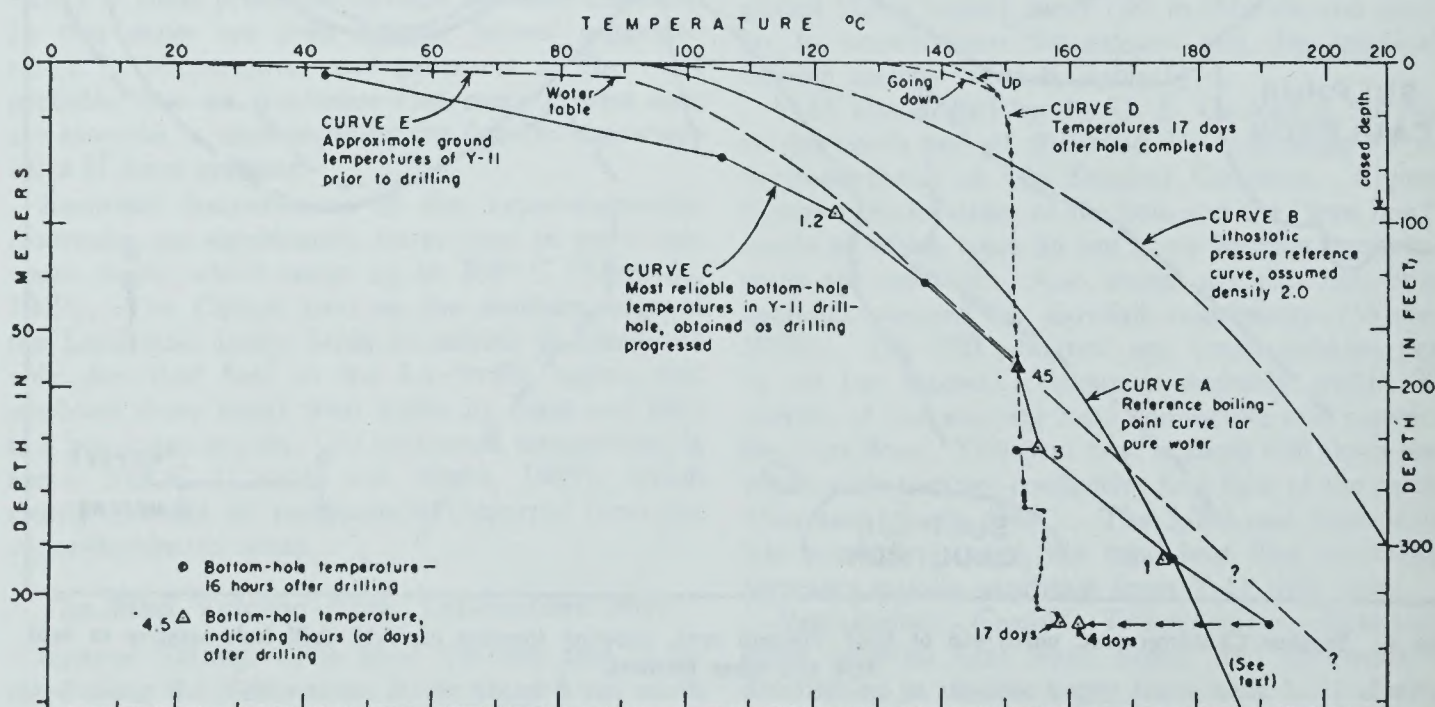


FIG. 6. Temperatures in Y-11 (Sulphur Cauldron) drill hole, Mud Volcano area, Yellowstone Park, Wyoming.

Table 4.--Temperatures, pressures, and other data from Y-11 (Sulphur Cauldron) drill hole, Mud Volcano area, Yellowstone National Park, Wyoming

Underlined data considered most reliable

Date and time 1968	Observation depth, m	Temperature, °C	Depth to water m	Total pressure kg/cm ²	Comments
May 15 8:35A	2.0	<u>43.0</u> 1			Drilled to 6.1 m, set 4 in. casing, and cemented on May 14; on cement at 2.0 m, temp. probably minimum.
12:10	8.3	(38.0)	2.3		80 min. after circulation ceased; good water level 1 hr. after circulation ceased.
3:25	18.1	87.0		0.85	Drilled 18.1 m; pressure all gas.
16 8:15A		104.4		1.11	06.
8:21	<u>11.3</u>	108.4	2.3	1.08	Gas only; 91°C at water level.
1:25P	27.7	<u>123.3</u>		2.05	1.2 hrs. since circulation; could have erupted; drilled, set 27.4 m 3 in. casing and cemented.
17 8:00A	13.7	73.0			On cement; temperature probably minimum.
4:45P	(41.8)	(116.1)	5.2		Drilled 41.8 m; lost circulation 37.2-41.8 m.
18 7:50A		137.0	4.9		Gas pressure from outside rods, 1.56 kg/cm ² temperature at water level inside rods 73°C.
8:08A	41.4	137.2			
1:00 P	(57.0)	(120.3)	4.7		Lost circulation 41.8-57.0 m; temp. 1-1/2 hrs. after circulation.
19 10:50A		152.4			
11:00	56.9	151.4	4.6		23 hrs. after circulation.
20 7:54A	57.0	151.4			
8:05	57.0	153.4			
8:12		150.9			
8:22		151.9	0.3		Water level fluctuating.
2:00P	72.2	<u>156.5</u>		0.8	3 hrs. after circulation, pressure fluctuating; water discharged outside of rods; drilled 72.3 m.
21 7:45A		151.1		3.5-3.6	Gas pressure; note temp. decrease since May 20. Drilled to 93.8 m; erupted after pulling core; nearly all steam after much initial water.
7:57	72.2	152.0			
12:20P	95.4	<u>174.3</u>		5.8 then to 4.1	Temp. 40 min. after eruption; some water with steam at 4.1 kg/cm ² .
3:45P		174.7		7.8 down to 5.9	Leaking steam at 7.8 kg/cm ² , then down to 5.9 kg/cm ² , some water.
3:50				4.4	Pressure on side valve, outside drill rods.
22 8:00A		175.7		10.1 down to 8.0	Leaking vapor only.
8:12	<u>92.6</u>	176.1			Vapor and a little water; drilling increasingly difficult >100 m. Violent eruption at 103.7 m, initially much water (drill water?), then mostly steam.
23 8:15A		191.6		12.7 to 11.2	Leaking vapor only. Drill rods in hole a few feet off bottom; exact depth not noted.
8:30A	105.7	191.1			
-11:00A				5.0	Rods pulled, pumping cold water down outside rods throughout; pressure with open hole >27.4 m. Hung up at about 33.6 m, erupted to clear--powerful steam eruption but little water.
27 Not noted	105.5	161.1		5.3	Note major permanent changes in temperature and pressure after rods out of hole.
		161.4		5.4	
June 19 10:00A	-105	<u>158.4</u>		5.3 to 5.4	Thermistor temperature series plotted on fig. 6. Temperature generally steady and reproducible down to 84.1 m, fluctuating somewhat at greater depths, up to 4°C at bottom (maximum is plotted).
10	96.3			5.0	R. O. Fournier attempted to sample; filled with vapor to sealing bottom.
28	39.0			4.6	Blocked; no access to greater depths; no water to 39.0 m.
Sept., 1969 21	28.0	<u>131.7</u>		3.2 to 3.5	Attempting thermistor series; initial temperature at top 75°C, increasing to 107°C with leakage of gas. Hole filled with gas to cave at 28.0 m just below casing; thermistor wedged and lost. Erupted gas, mud, and water, and collected water sample.
					Pumped in 5 sacks of cement at pressures up to 11.3 kg/cm ² .

perature gradient. As steam rises above a depth of 1 m, however, a little starts to condense as a temperature gradient first becomes evident. The gra-

dient increases upward as the surface is approached, so more water vapor can condense. The residual gases are progressively concentrated upward as H₂O

is condensed, the velocity of upflow consequently decreases, and a correspondingly smaller proportion of the total heat is transported by water vapor. Convective transport of heat at the air-ground interface must be largely in the residual gases, but water vapor, even though a minor constituent, is still a significant transporter of heat because of its high heat of vaporization (588 cal/gm at 15° C), relative to heat content of other gases.

The water vapor that condenses between 1.0 m and the surface at W-1 percolates downward against the flow of steam. The ground is unsaturated with liquid at the bottom of the auger hole and probably to the local water table (2.3 m in Y-11 drill hole). Below the water table at W-1, pressures must exceed atmospheric, and temperatures probably rise along or near the hydrostatic boiling point curve of Figure 6.

The near-surface temperature gradient in auger hole W-1 of Figure 5 is much higher than in T-1, as we should expect from the heat-flow contours of Figure 4. Projection of the T-1 gradient downward to the water table at 2.3 m suggests that temperatures were slightly below boiling at this depth. It appears that only a little water vapor and other gases were rising at the Y-11 site prior to drilling, and most heat was being transferred from the water table to the ground surface by conduction.

Physical Measurements Made During Drilling of Y-11.—Data from Y-11 are summarized in Table 4, and bottom-hole temperatures are plotted in Figure 6. The bottom-hole temperatures considered to be most reliable are connected by a solid line. Much effort was made to obtain reliable data from Y-11 as drilling progressed, in part because of the paucity of such data from the large commercial vapor-dominated systems. Because of the high cost of drilling and other factors, available data from the commercial systems are entirely restricted to completed wells, and almost no data are obtained at shallow and intermediate depths as drilling progresses.

In the recent holes drilled in Yellowstone National Park, temperatures measured at each temporary bottom, just before resumption of drilling (generally after overnight shut-down of about 16 hours), provided reasonable approximations of pre-drilling ground temperatures; they are far superior to temperature profiles measured in completed holes (White, Fournier, Muffler, and Truesdell, unpublished data). Measured bottom-hole temperatures in Y-11, however, are less reliable than in the other holes but are considered to be within a few degrees of original ground temperature. At depths less than 27.4 m, rapid drilling plus the setting of two strings of casing prevented acquisition of reliable data. From 37.2 to 79.3 m, all drill water was lost into the

ground, and at greater depths only about 50 percent returned to the surface. Despite the apparent high permeability and loss of drill water, however, the temperature of 151.9° C at 57.0 m depth is probably reliable because it was repeated on successive days with no disturbance by drilling.

A temperature profile made in the open hole 17 days after completion is shown on Figure 6 (curve D). It differs greatly from the temperature profile obtained as drilling progressed. The temperatures from 12.2 to 83.5 m were almost constant, rising only 2° or so, to 153° C at 83.5 m. At greater depths, rapid fluctuations of 1° to 5° were observed. These fluctuations were not due to instrumental defects and were far too large and too rapid to be caused by only a vapor phase; coexistence of steam and water is thus indicated from 83.5 to 103.7 m. The pressure of saturated steam at 153° C is 5.3 kg/cm², which is very close to the measured well-head pressure, 5.4 kg/cm². The temperature of 158.2° C at 103.7 m, however, is not consistent with the well-head pressure, unless liquid water was present near the bottom of the hole. From drill records, we conclude that water was probably entering the hole from depths as shallow as 58 m or less, while an upward flow of steam dominated the central part of the casing. Detailed relationships that existed during the thermistor measurements between 83.5 and 103.7 m cannot be deciphered completely. Evidently some steam was flowing in near 84.2 and 103.7 m. Water seeping down from higher levels did not accumulate extensively but was either forced out into permeable walls or was evaporated by the higher temperature steam. At shallow depths in the hole, horizontal and vertical temperature gradients were so high that most water vapor condensed and residual gases were concentrated, as in auger hole W-1. The condensed water trickled down the walls of the casing.

On several occasions during the drilling of Y-11, we were unable to prevent the hole from erupting for short intervals. The eruptions differed notably, however, from those in holes in the hot-water systems of the geyser basins. In drill holes in permeable rocks, with adequate water supply, and a temperature of 160° C, for example, only 11 percent of the total liquid water vaporizes to steam when erupted (at constant enthalpy) to atmospheric pressure (Fig. 2). The remaining 89 percent of the erupted mass is liquid; the large content of liquid water produces effects that are similar to those of the early stages of geyser eruptions. During an eruption of Y-11, however, the local supply of liquid water was soon nearly exhausted and steam became completely dominant. We estimated that the steam was associated with less than 10 percent of liquid water

by weight. Although at no time did the hole discharge dry steam free of liquid water, we are confident that a dry discharge would have occurred if the eruption had been permitted to continue or if the hole had been cased a little deeper. (The hole was uncased below 27.4 m, and the bottom-hole temperatures indicate an original dominance of liquid water in pore spaces to depths of about 73 m; curves C and E, Fig. 6.)

The pressure of 12.7 kg/cm² measured in the drill rods on May 23 at the greatest drilled depth represents the approximate total pressure at the drill bit, assuming vapor-filled drill rods raised the usual 3 to 4½ m above bottom (1 to 1½ lengths of drill rods), and neglecting the weight of the vapor. If 3.7 m off bottom is assumed, with liquid water filling the hole below the rods, the calculated bottom-hole pressure was about 13.1 kg/cm² (with a possible range from about 12.8 to 13.6 kg/cm²). The pressure at the bottom of an open hole 105.8 m deep and filled with water everywhere just at boiling should be 10.5 kg/cm². Thus, the excess pressure above hydrostatic was about 2.6 kg/cm² or 25 percent. The fact that temperatures and pressures are higher than those of a simple hydrostatic control is important and must be consistent with any satisfactory general model of the vapor-dominated systems.

Liquid-dominated and Vapor-dominated Parts of the System.—In Y-11 drill hole, water-saturated ground evidently extended from the water table at 2.3 m down to a depth of about 73 m. At 72.2 m, the bottom-hole temperature measured 3 hours after drilling ceased was 154.5° C; 18 hours later it had dropped 3° C. We believe that this change was due to the cooling effect of drill water continuing to drain down the hole and into channels that had formerly been dominated by vapor. The pre-drilling ground temperature probably was not attained at this drilled depth and was probably about 165° C (Fig. 6, curve E); flow of water down the hole prevented a normal temperature recovery.

The hole was definitely in vapor-dominated ground at a depth of 93.4 m. At this depth an unanticipated eruption through the drill rods first discharged abundant drill water and then changed rapidly to wet steam with only traces of liquid water. Such a change in behavior is not particularly significant in tight rocks of a hot-water system when the water available for immediate eruption is exhausted; the behavior is similar to that of a geyser as it changes from its main eruptive phase to a steam phase (White, 1967a). However, permeability was so high at all depths below 37 m in Y-11 that little or no drill water returned to the surface. Lack of permeability clearly does not explain the observed eruptive behavior; a limited supply of *available liquid*

water provides the only reasonable alternative. If all lost drill water had remained in nearby permeable ground, the eruption likewise could not have been so nearly dry. The drill water must have percolated down former vapor-filled channels to become unavailable in supporting the eruption.

Forty-six days after completion of the hole, measurements made by an in-hole sampling device (Fournier and Truesdell, 1970) demonstrated that the hole was filled with vapor to 96.4 m, where caving had occurred. Presumably all drill water was then exhausted and all inflowing pore water from higher levels either evaporated completely or escaped downward through former vapor-filled channels.

From these data we can conclude that vapor pressure in the hot core of the system below about 76 m is now significantly above hydrostatic pressure (Fig. 6). Some vapor is being forced upward and outward into the cooler walls. The excess driving pressure above hydrostatic presumably is dispersed in overcoming the frictional resistance to flow of vapor along narrow channelways, which become increasingly clogged upward and outward with liquid water condensed from steam; some of the gases other than steam dissolve in this liquid condensate. If many large free-flowing channels vented to the surface as fumaroles and mud volcanoes, the high vapor pressures in excess of hydrostatic obviously could not be maintained.

Another factor that may be of major importance in impeding the escape of vapor is the formation of montmorillonite and kaolinite, which are the dominant alteration products in rocks and fracture fillings of Y-11 drill core from about 15 to 58 m. Montmorillonite and kaolinite also occur sporadically at greater depths but are generally less abundant than other hydrothermal minerals and unaltered rock silicates. The condensed steam is saturated with CO₂ and other gases from the rising vapor. This carbonated water, represented by analyses 6 and 7 of Table 1, is highly effective in altering feldspars and other silicates to clay minerals, and in leaching cations from the rocks. Pyrite is also relatively abundant through the same general interval, from 18 to 61 m, but is sporadic at greater depths. Much sulfide from the rising H₂S evidently dissolves in the condensate and becomes fixed, combining with Fe of the rocks.

The hot vapor-dominated core of the system evidently is not sharply separated by a single fluid interface from the cooler liquid-dominated walls. We conclude that, in the core of the system, the largest fractures and open spaces are mostly or entirely filled with vapor but open spaces of similar dimensions in the margins of the system are largely filled with liquid water, except for dispersed clays

and vapor bubbles that sporadically rise through the water.

General Model of Vapor-dominated Geothermal Systems

A vapor-dominated geothermal system must normally develop from water-saturated rocks. This statement may be unconvincing for young volcanic rocks (how do we *know* that such rocks were ever water-saturated?) but is irrefutable for old marine sediments that are now far below the regional water table, as in Tuscany and The Geysers. A new regime is initiated with the introduction of a local potent source of heat at depth (probably a body of magma). Much heat is transferred via conduction and circulating water into surrounding rocks that

have some permeability. Because of thermal expansion and resulting decrease in density of the heated water, a *hot-water* convection system is then initiated. Most rocks seem to be sufficiently permeable to persist as hosts for hot-water systems; the rate of flow of water remains high enough and the supply of conducted heat below the circulation system remains low enough for most of the water flowing through the system to remain liquid. Near-surface temperatures in the hotter systems, however, are high enough for some boiling to occur as the water rises to intersect the boiling point curve (A of Fig. 6). The depth where boiling first occurs in the rising water depends mainly on the temperature of the water.

Many hot-water systems are to a major extent self-regulating. With more heat flow, the upflowing

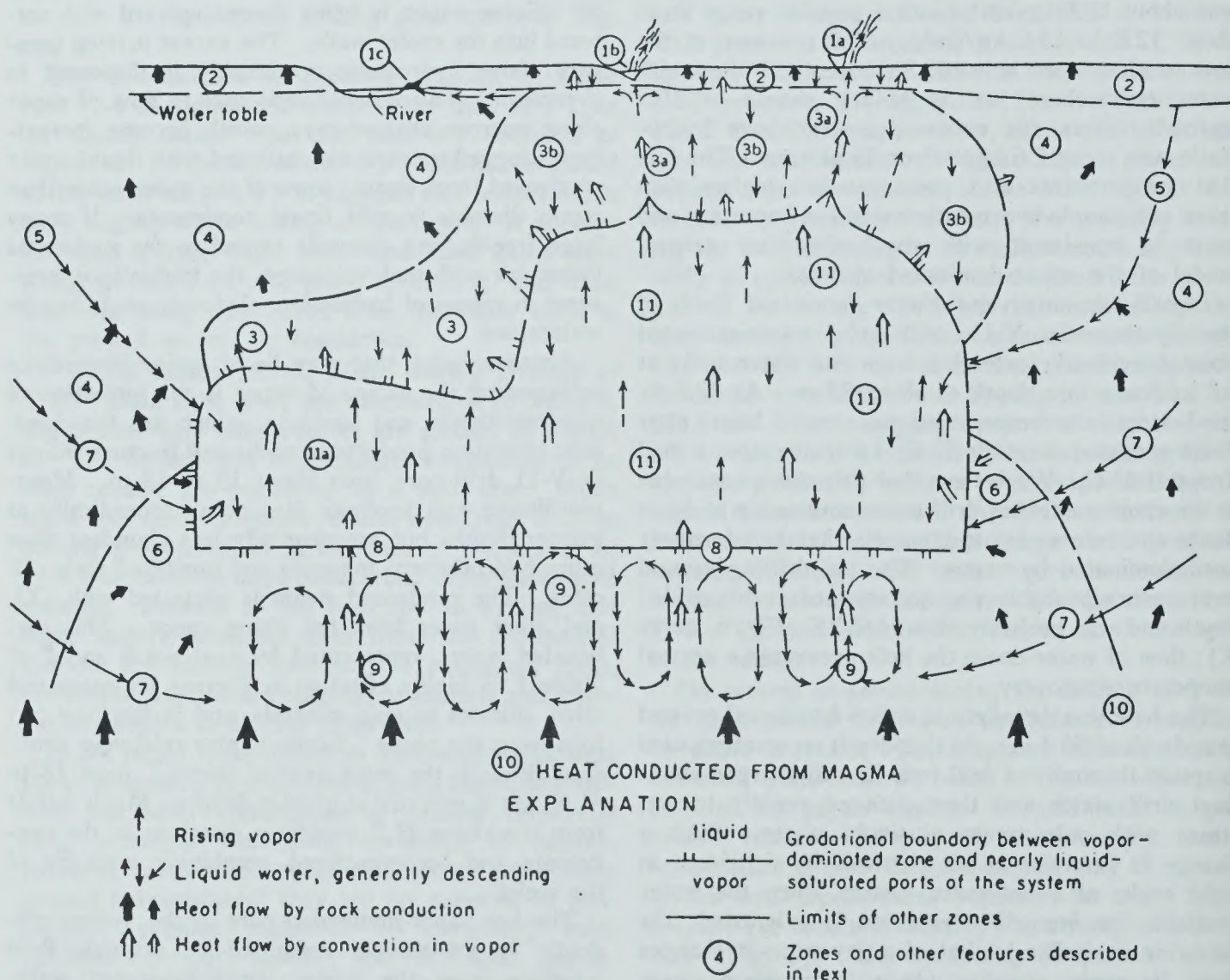


FIG. 7. Model of dynamic vapor-dominated geothermal reservoir surrounded by water-saturated ground. The most significant parts of the model, inward and downward by number, are: 4) zone of conductive heat flow; 3) zone of condensation of steam (conductive and convective heat flow equally important); 11) main vapor-dominated reservoir, with convective upflow of heat in steam in larger channels, and downflow of condensate in small pores and fractures (surface tension effects); 9) deep zone of convective heat transfer, probably in brine; 10) deep zone of conductive heat flow (too hot for open fractures to be maintained). Other features are discussed in text.

water becomes hotter and lower in density and viscosity; the pressure drive for recharge increases, and the increased rate of through-flow removes most of the additional heat. This self-regulation, however, may be limited by insufficient permeability.

With sufficiently potent heat supply or, for any reason, a decreasing rate of recharge of water, a hot-water system of limited permeability may start to boil off more water than can be replaced by inflow. A *vapor-dominated system* then starts to form. Direct evidence for the assumed initial dominance of liquid water is lacking for the major vapor-dominated systems. Hot-spring sinter constitutes the clearest evidence, and is so interpreted for the Mud Volcano system. However, sinter is deposited only from very hot water that flows so rapidly to the surface that little SiO_2 precipitates en route. In addition, the early hot-water stage of these systems of high heat flow and low permeability is likely to have been brief and their thin sinter deposits (if any) are likely to be destroyed by erosion.

Figure 7 is our tentative general model of a well-developed vapor-dominated system. Different parts, discussed below, are keyed by number on the figure.

(1) Fluids that discharge at the surface provide much of the evidence for a vapor-dominated system. Fumaroles (1a) are generally at temperatures near surface boiling or somewhat lower. High-chloride springs are completely absent; associated springs and mud pots are generally acid, high in sulfate, and low in discharge (such as 1b of Fig. 7, and anal. 2 and 5, Table 1), and they deposit little if any sinter. Surrounding ground may be bleached and lacking in vegetation. Some springs not so strongly influenced by oxidation of H_2S (or containing enough NH_3 absorbed from gases) are nearly neutral in pH and are dominated by bicarbonate and sulfate without much chloride (1c, Fig. 7, and anal. 1 and 6, Table 1).

(2) Zone 2 lies between the ground surface and the water table.⁵ Where hot enough, steam and other gases rise above the water table, as in auger hole W-1 of Figure 5. At the water table heat transfer is nearly all convective, but as the temperature gradient increases upward and water vapor condenses, near-surface heat transfer becomes largely conductive.

(3) Zone 3 inhibits the free escape of rising vapor. The zone is nearly saturated with liquid water derived largely from condensing steam rich in CO_2 . Montmorillonite and kaolinite form by reaction of this

CO_2 -saturated condensate with rock silicates. Clay minerals and condensed water clog most pore spaces and channels, impeding but in many places not prohibiting the escape of residual uncondensed gases. Temperatures in this zone may be similar to those along the hydrostatic reference curve A of Figure 6. Near major channels of upflowing steam (3a, Fig. 7), temperatures and pressures are somewhat above hydrostatic, and conductive heat flow and condensation of steam are consequently high; at least part of the condensate is swept upward to the water table or to surface springs, mud pots, and mud volcanoes. A crude steady-state rate of upflow is determined by pressure gradients, dimensions of the channels, strength of wallrocks, and impedance provided by condensate and suspended clays. Other parts of zone 3 (3b, Fig. 7) are dominated by downflowing condensate and some surface water, with temperatures that are likely to be somewhat lower than those along reference curve A of Figure 6. As temperature gradients in general increase outward and upward through zone 3, more of the heat of vaporization in the rising steam can be transferred by conduction, so water vapor is continuously condensing and the rate of mass flow of vapor therefore decreases upward. A part of the heat in rising vapor is transferred through local horizontal gradients to heat the downward-percolating condensate, which must absorb heat as it descends into hotter ground. The dashed line bounding the outer part of zone 3 marks the gradation in mode of heat transfer from dominantly convective to dominantly conductive.

The lower limit or "pinch-out" of zone 3 is at a depth where the hydrostatic pressure of water in the reservoir margins exceeds the total vapor pressure of steam and gases in the reservoir. Below this depth, vapor can no longer effectively penetrate the reservoir margin.

Wells drilled into parts of zone 3 may produce liquid dominantly, but if drilled and cased into deeper parts they probably yield wet steam and some water when first produced (as in Y-11 drill hole). If an uncased section of hole intercepts channels of upflowing steam and zones of cooler downflowing condensate, the temperature and pressure of the steam will commonly dominate the hole. This occurred in Y-11 below 72 m.

(4) Zone 4 is characterized mainly by conductive heat flow, with heat being supplied from condensing steam within zone 3. Wells bottomed in zone 4 may fill with water, and may erupt hot water and some steam, but discharge rates are likely to be low and the wells noncommercial.

(5) Representative channels of intermediate-level recharge are deep enough at points of entry for hydrostatic pressure to exceed the vapor pressure of

⁵ In sands and gravels the water table is easily recognized. In clays, however, the water table is poorly defined, but we consider it to be the level at which water is maintained in a shallow open hole. The zone of saturation can rise as much as 10 m above this level, owing to surface tension in the clays. Hydrostatic pressure increases downward only below the water table as defined in the open hole.

about 31 to 35 kg/cm² in the main reservoir (zone 11).

Channels of inflow tend to be enlarged by solution of SiO₂ as the inflowing water is heated by conduction (indicated by heat-flow arrows in Fig. 7). Channels are diminished, however, by deposition of CaCO₃ and CaSO₄, which are rather unusual in *decreasing* in solubility with increasing temperature (see, for example, Holland, 1967). In all rocks with recharge waters relatively high in CaCO₃ and CaSO₄, channel permeabilities are especially likely to *decrease* rather than increase with time. These considerations may be important in understanding Larderello, which involves anhydrite-bearing limestone and shales, and The Geysers, where mafic lavas and serpentine are associated with graywacke and shale.

(6) Zone 6 consists of reservoir margins where temperatures decrease *toward* the reservoir. The depth of the top of zone 6 is not easily predicted. If there were no convective heat flow, the depth would be near that of the 240° C isotherm of the original conductive gradient from the surface to the magma chamber. If 600° C is assumed at 4 km, for example, and the rocks are homogeneous, 240° C would be at 1.6 km depth. The development and downward penetration of the main vapor-dominated reservoir as excess pore water is vaporized result in extensive convective modifications of temperature that greatly change the relationships. Convective cooling from downflowing meteoric water increases this depth, and a shallower intrusion at higher temperature decreases it. These reservoir margins contain channels of inflowing water at pressures that are close to hydrostatic and much greater than ~33 kg/cm² of the reservoir. Sharp pressure and temperature gradients decreasing toward the reservoir must therefore exist in zone 6. In contrast to zone 3, heat is transmitted through zone 6 by conduction (and inflowing H₂O) to the reservoir. The temperatures of zone 6 grade downward into, and are maintained by conduction from zone 10.

(7) Channels of inflowing water are narrowed by precipitation of calcite and anhydrite as zone 6 is approached; clogging of channels by these minerals of decreasing solubility may be offset entirely or in part by solution of quartz, which increases in solubility as long as the liquid water continues to rise in temperature. At the outer edge of zone 6, however, pressures and temperatures in the recharge channels attain their maxima; with further flow toward the reservoir, boiling commences and *temperature declines* as the pressure drops to that of the reservoir. The fluid in these channels is now a two-phase mixture of steam and water. Specific resistance to flow (resistance per unit of *mass*) of steam is much

greater than that of liquid water, and specific flow resistance of a two-phase mixture is greater than a linear combination would indicate (I. G. Donaldson and Gunnar Bodvarsson, oral commun., 1970). Because of evaporative concentration by boiling and because of decreasing temperature, quartz and other minerals are now deposited, further impeding the flow of the two-phase mixture. The result of all of these processes is to decrease the rate of recharge through the deeper channels.

(8) The deep subsurface water table recedes as long as the heat supply is sufficient for net loss of liquid water and vapor from the system to exceed net inflow (water table shown in Fig. 7 is horizontal, but it may be very irregular in detail). As mentioned above, recharge tends to decrease with time as resistance to flow of H₂O through individual channels increases. As the water table recedes and liquid water in the reservoir is largely replaced by vapor at nearly constant pressure throughout the reservoir, the driving pressure on the deeper channels of inflow increases, offsetting in part the increasing impedances. A crude steady state may be attained in some systems, especially as rate of heat flow eventually starts to decline.

(9) With time, if not initially, the water boiling below the deep water table becomes a brine as recharging water boils off and as dissolved substances of low volatility are residually concentrated. Vapor from brine is superheated with respect to pure water at the same pressure. Steam boiling from 25 percent NaCl brine at 35 kg/cm², for example, is superheated by about 12° C with respect to saturated steam and pure water (254° vs 242° C, Haas, 1970). The critical temperature of a salt solution increases above that of pure water (374° C) as salinity increases; that of a 1 percent NaCl solution is about 384° C (Sourirajan and Kennedy, 1962, p. 134); that of a 10 percent solution is about 480° C; and that of a 25 percent solution is about 675° C. Thus, brine can be a very effective agent for convective transfer of heat and dissolved matter at temperatures much above 374° C. Note that Figure 7 has no vertical scale; the depth of zone 9 may be 1,000 m or more, and through all or most of this depth, pressures are *lower* than hydrostatic pressures outside the system (Fig. 1, curve C, increases downward in slope).

(10) Conductive heat flow from the magma predominates deep under the reservoir where rock plasticity due to increasing temperature prevents the maintenance of open channels. On the outer margins of zone 10 where convective disturbance is not so severe, conductive heat flow predominates to higher levels than under zone 9, grading upward without distinct boundaries into zones 6 and 4. The amount of convective circulation may eventually de-

crease beneath the vapor-dominated reservoir by decreased permeability from deposition of minerals, and possibly as a stable salinity gradient becomes established.

11) The main vapor-dominated reservoir contains *liquid water and vapor coexisting*, except possibly in major channels of steam discharge and locally just above the brine water table. Steam and other gases rise in the largest channels where resistance to flow is lowest. Steam starts to condense on the outer borders of the reservoir and continues to condense from all vapor escaping into zone 3, where temperatures decrease outward and provide a thermal gradient for conductive transfer of the heat of vaporization of steam. The condensate from zone 3 percolates down into the reservoir, favoring narrow channels and pore spaces between mineral grains because of surface tension and the lower specific resistance to flow of liquid water relative to steam.

Edwin Roedder (personal commun., 1970) has suggested that our model for vapor-dominated systems is similar in many respects to recently-developed remarkable devices that have been called "heat pipes" (Eastman, 1968). These devices may be "several thousands of times more efficient in transporting heat than the best metallic conductors." They consist of a closed chamber with inside walls lined by a capillary structure or wick, and saturated with a volatile fluid. Heat is transferred by vapor from the hotter to the cooler end, where the vapor condenses. The liquid condensate returns by capillary action to the evaporator section; temperature gradients in the pipe may be extremely low. The top end may be the hotter, with capillary return of liquid (to some limited height) being opposed by gravity. Our natural "heat pipes" are not completely closed systems, and their depth has no theoretical limit because gravity assists rather than opposes the return flow of condensate.

Parts of the subsurface reservoir such as 11a of Figure 7 may be isolated from direct outflow of vapor and may be representative of parts of the Larderello and The Geysers systems that have no apparent direct discharge in fumaroles. Pressures throughout the reservoir are controlled primarily by the total vapor pressure at the boiling water table, modified by frictional resistance to the upward flow of vapor and by the weight of the vapor. Near the top of the reservoir the vapor may be greatly enriched in CO_2 , H_2S , and other gases that are not flushed out of the system as actively as near the top of the main reservoir (11). Much water vapor condenses below the boundary of the vapor-dominated reservoir near 11a. In contrast to the flushed part of the main reservoir, significant thermal gradients exist in the poorly flushed parts. Consequently,

Table 5.--Saturation temperatures of water calculated for ideal steam-gas mixtures at constant vapor pressure, 31.8 kg/cm².

Percent steam	Percent other gases	Pressure, kg/cm ²	Saturation temp., °C
100	0	31.8	236
99	1	31.5	235.5
98	2	31.2	234.9
95	5	30.2	233.1
90	10	28.6	230.1
80	20	25.4	223.7
70	30	22.3	216.9
50	50	15.9	200.1
30	70	9.5	176.8
10	90	3.2	134.7
5	95	1.6	113.0
1	99	0.3	68.0

some steam can condense and other gases are residually concentrated. Pressure of the remaining water vapor requires lower saturation temperatures, as shown in Table 5. This table suggests that temperatures in isolated parts of the reservoir differ little from 236° C until the residual gases are enriched above 5 percent. With higher residual gas contents, temperature gradients and conductive heat flow increase.

The above-described relationships may explain the relatively high pressures and low temperatures of the vapor-dominated fields of Bagnore and Piancastagnaio near Monte Amiata (Burgassi and others, 1965; Cataldi, 1967). Initial pressures were 22 to 40 kg/cm² and gas contents of the vapor were as high as 96 percent, but reported temperatures did not exceed about 150° C (Burgassi, 1964; Burgassi and others, 1965; Cataldi, 1967). Pressures and gas contents of the vapor decreased rapidly with production.

Similar reasoning indicates that high contents of gas in vapor coexisting with liquid water at a temperature near that of the maximum enthalpy of steam can result in total vapor pressure significantly above 31.8 kg/cm² at 236° C (Table 6). These data indicate that, as contents of other gases increase in the vapor phase at constant temperature of liquid and vapor, total pressures must increase. The least

Table 6.--Total vapor pressures of steam-gas mixtures coexisting with liquid water at 236°C

Vol. percent gas in vapor	H ₂ O pressure kg/cm ²	Pressure other gases, kg/cm ²	Total pressure, kg/cm ²
0	31.8	0	31.8
1	31.8	0.3	32.1
2	31.8	0.7	32.4
5	31.8	1.7	33.5
10	31.8	3.5	35.3
20	31.8	7.9	39.8
50	31.8	31.8	63.6

Note: Pressures 32.4 and 39.8 in column 4 should read 32.5 and 39.7 respectively.

actively flushed extensions of The Geysers field that have recently been discovered are likely to have higher gas contents and initial pressures than the original field.

Table 6 also suggests a possible triggering mechanism for some hydrothermal explosions and phreatic eruptions (Muffler and other, 1970) in gas-rich hot-spring and volcanic systems where escape of vapor and flushing of residual gases are inhibited by barriers of low permeability. Local accumulations of gas-rich vapor can attain pressures that exceed hydrostatic and perhaps even lithostatic, finally resulting in rupture and explosive eruption.

The tentative model described above has additional support from thermodynamic calculations and comparison of actual production data with production predicted on the basis of our model (manuscript in preparation). We are hopeful that the model will prove to be of value in predicting the behavior of individual wells, in detecting interference between wells, in detecting inhomogeneities within the reservoir, in calculating reserves of steam in the original vapor-dominated reservoir, and in detecting a major influence by increased boiling below the water table as a result of declining reservoir pressures.

Speculations Relating Vapor-dominated Systems and Ore Deposits

Some mercury deposits may have formed in the upper parts of vapor-dominated systems. We also suggest, more tentatively, that porphyry copper de-

posits may have formed in the deep brine zones hypothesized to underlie vapor-dominated reservoirs.

Mercury Deposits.—Many mercury deposits appear to have formed near the surface in relatively recent time. Furthermore, mercury deposits occur on the periphery of two active vapor-dominated geothermal systems: The Geysers in California and Monte Amiata in Italy (White, 1967b; Dickson and Tunell, 1968). Recent geothermal exploration for extensions of The Geysers field disclosed dry steam 2½ km to the west under the Buckman mercury mines. Other wells yield dry steam near Anderson Springs, only 1½ km from the Big Chief and Big Injun mercury mines (White, 1967b), which are 10 km southeast of the original steam field. A number of other mercury mines in the district are within 3 km of steam wells.

Vapor-dominated systems of high gas content, previously discussed, have recently been discovered from 3 to 10 km south and southwest of the major Monte Amiata mercury mine (Burgassi and others, 1965; Cataldi, 1967), the largest Italian mercury deposit. No vapor-dominated reservoir has been found to prove a genetic relation to the mercury deposits, although abnormally high temperatures (63° C at 440 m depth) and notable concentrations of CO₂ and H₂S characterize these Italian deposits (White, 1967b). Dall'Aglia and others (1966) have shown that mercury occurs in anomalous amounts (> 1 ppm) in stream sediments in and around the Larderello-Monte Amiata fields. The anomalies in some stream drainages may be related to specific mercury deposits, but many clearly are not. These widespread anomalies instead seem more directly related to the geothermal fields and their broad anomalies in temperature gradient (Burgassi and others, 1965, Fig. 7).

Krauskopf (1964) has emphasized the high volatility of mercury, which provides an attractive mechanism for separating this metal from most others. The vapor-dominated geothermal systems, as we now understand them, provide a mechanism for shallow, moderately high temperature vapor-phase separation of mercury from other metals. Mercury is known to occur in vapor from The Geysers steam field (White, 1967b, p. 590, and unpub. data), and large mercury anomalies have been found in Yellowstone Park in mudpots of the Mud Volcano area and elsewhere, that are maintained by steam flow and condensation (W. W. Vaughn, U. S. Geol. Survey, written commun., 1969). Especially attractive is the possibility that Hg and H₂S dissolve in the steam condensate of zone 3 of our model (Fig. 7), precipitating as HgS as temperature decreases and as the pH of the condensate increases from reaction with silicates.

We do not claim that *all* mercury deposits form in this way. The Sulphur Bank and Abbott mines east of The Geysers, for example, are associated with discharging thermal chloride waters that may be, respectively, metamorphic and connate waters being forced out of their source rocks by lithostatic pressure (White, 1957b, 1967b). During peak mineralization at high temperatures, similar water was almost certainly being discharged, perhaps with more abundant vapor than now.

Porphyry Copper Deposits.—The possibility that porphyry copper deposits may be forming in the zone of boiling brine below vapor-dominated systems (zone 9 of Fig. 7) should be tested in these systems by looking for copper minerals in core and cuttings from the deepest drill holes. The model provides attractive possibilities for explaining many aspects of these deposits:

1. Recent isotope studies (Sheppard, Nielsen, and Taylor, 1969) demonstrate that water of meteoric origin probably is dominant over water of other origins during mineralization stages.

2. Temperatures of filling of fluid inclusions are most commonly above 250° C and exceptionally range up to 725° C (Edwin Roedder, oral and written commun.). The salinities of many inclusions are exceedingly high, probably ranging up to 60 percent of total fluid by weight. However, many inclusions are largely vapor, probably indicating boiling of the saline fluid at the time of entrapment.

3. Fluid relationships and the geologic setting of Copper Canyon, Nevada, are considered to be generally similar to porphyry copper deposits (J. T. Nash, written commun., 1970). Extensive fluid-inclusions studies by Nash and Theodore (1970) demonstrate that a) temperatures are most commonly in the range of 315° to 375° C; b) salinities of the ore fluids are commonly in the order of 40 percent (or higher, if CaCl_2 is abundant), with highest salinities in and near the porphyry intrusion and with lower salinities (2 to 15 percent) in peripheral gold-bearing deposits; c) vapor bubbles were trapped in many inclusions, demonstrating the prevalence of boiling or near-boiling conditions. The copper deposits are largely dispersed in the intruded rocks adjacent to the porphyry, and thus are within the spectrum of deposits that have been called porphyry copper deposits (Lowell and Guilbert, 1970).

4. High-salinity brines can develop from residual concentration of dilute (or saline) recharge water, providing a satisfactory system for transferring heat, metals, sulfur and CO_2 from the large magma body that presumably underlies the small multiple porphyry intrusions of most deposits. The critical temperature of water increases with salinity; with sufficient con-

tents of alkali and calcium chlorides, water can remain liquid at temperatures as high as those of the magma body. Copper and other metals could be derived from the local porphyries, a larger underlying magma chamber, and from surrounding rocks.

5. The return flow of condensate through the vapor-dominated reservoir is relatively dilute, but is normally saturated in SiO_2 (with respect to quartz, 440 ppm at 240° C, Fournier and Rowe, 1966). Reevaporation of this water may account for much of the abundant hydrothermal quartz of porphyry copper deposits.

6. Condensate from the discharge areas of vapor-dominated systems is high in sulfate. Some and perhaps much of this condensate may drain downward to the deep water table and account for the abundant anhydrite of many porphyry copper deposits.

7. The most commonly quoted range in depth for the tops of porphyry copper deposits is from 1,000 to 3,000 meters (Lowell and Guilbert, 1970). The shallower depths seem too low for attaining the indicated temperatures and salinities, but may be possible in a brine below a shallow vapor-dominated reservoir (Fig. 1, curve C, can be at shallower as well as greater than plotted depth).

8. If porphyry copper deposits were indeed formed at depths of 1,000 to 3,000 meters, if most of the water of the ore fluids is of surface origin, as indicated by isotopes, and if near-magmatic temperatures and excess heat flow were maintained close to the surface for thousands of years, some type of hydrothermal activity *must* have characterized the then-existing ground surface. Hot-water systems are numerically far more abundant than vapor-dominated systems, and may be the surface expression of some kinds of ore generation (White, 1967b, 1968a), but dissolved salts are *dispersed* by discharging water, and extreme salinities are not ordinarily attained. The highest salinity yet known in active hot-water systems is about 25 percent, characterizing both the Salton Sea and the Red Sea geothermal brines (White, 1968a). Chemical evidence indicates strongly that the high salinities of these two systems result from the solution of NaCl-rich evaporites. We doubt that evaporites are also involved in the generation of all porphyry copper deposits; some other mechanism for attaining extreme salinity is indicated. Our proposed mechanism for residual concentration of salts by boiling below vapor-dominated systems is a feasible and attractive possibility.

9. The postulated water below a vapor-dominated reservoir may be characterized by high positive temperature and salinity gradients extending downward from the deep water table (Fig. 1), thereby providing a favorable environment for upward transport and

deposition of copper sulfides and pyrite. Temperatures in the water-dominated zone must increase toward the source of heat, presumably an igneous intrusion; actual gradients are highly dependent on the extent of convection in this zone. Formation of vapor bubbles probably occurs largely near the base of penetration of water of the system, where temperatures are highest relative to pressure. Salinity is thereby increased by residual concentration near the base, where permeability is low enough to inhibit convection. On the other hand at higher levels near the deep water table, dissolved salts are being diluted by three processes: (a) *condensation* of dilute water from steam bubbles rising in the brine, as pressures decrease to about 34 kg/cm², as discussed above; (b) downward percolation of *condensate* of steam from the upper margins of the vapor-dominated reservoir; and (c) entry of *new water* recharging the system; this water is likely to be considerably more dilute than the average deep water.

Porphyry copper deposits should be reexamined with consideration of these speculations on temperatures and salinities. If temperatures and salinities do increase sharply downward, our model may provide a new understanding of mode of transport and deposition of the ore minerals. Both decreasing temperature and decreasing salinity upward should favor precipitation of copper sulfides because of the decreasing stability of copper chloride complexes. Introduction of the ore metals may normally occur during a late stage in the total activity after very high salinities have been attained from residual concentration by boiling, and perhaps after the deepest permeable fractures (zone 9 of Fig. 7) have extended downward into a partly cooled major magma chamber.

Porphyry copper deposits should also be examined to determine whether the primary deposits were limited in upward development by a subsurface water table (8 of Fig. 7). Copper and other base metals have low volatilities and could not be transferred into the vapor-dominated reservoir. Pyrite and cinnabar are likely to be characteristic of the zone of condensation (zone 3), and pyrite can also form within the reservoir (zone 11) by reactions involving H₂S and Fe of the rocks. However, pyrite is likely to be much more abundant below the brine water table. Thus, where the original upper limit of copper mineralization and the level of the former brine water table are exposed in the present topography, the water table may be indicated by an anomalous upward *decrease* in supergene oxidation, where pyrite was initially so scarce.

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MENLO PARK, CALIFORNIA,
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REFERENCES

- Allen, E. T., and Day, A. L., 1927, Steam wells and other thermal activity at "The Geysers," California: Carnegie Inst. Washington Pub. 378, 106 p.
- , 1935, Hot springs of the Yellowstone National Park: Carnegie Inst. Washington Pub. 466, 525 p.
- Baba, Kenzo, 1968, On the temperature and pressure measurements of the geothermal well Matsukawa No. 4: Japan Geol. Survey Bull., v. 19, no. 11, p. 725-728.
- Banwell, C. J., Cooper, E. R., Thompson, G. E. K., and McCree, K. J., 1957, Physics of the New Zealand thermal area: New Zealand Dept. Sci. and Indus. Research Bull. 123, 109 p.
- Barnes, H. L., and Czamanske, G. K., 1967, Solubilities and transport of ore minerals, in Barnes, H. L., Editor, *Geochemistry of Hydrothermal Ore Deposits*: New York, Holt, Rinehart, and Winston, Inc., p. 334-381.
- Bodvarsson, Gunnar, 1964a, Physical characteristics of natural heat resources in Iceland, in *Geothermal Energy I*: United Nations Conf. New Sources Energy, Rome, 1961, Proc., v. 2, p. 82-90.
- , 1964b, Utilization of geothermal energy for heating purposes and combined schemes involving power generation, heating, and/or by-products, in *Geothermal Energy II*: United Nations Conf. New Sources Energy, Rome, 1961, Proc., v. 3, p. 429-436.
- , 1970, Evaluation of geothermal prospects and the objectives of geothermal exploration: *Geoexploration*, v. 8, p. 7-17.
- Burgassi, Renato, 1964, Prospecting of geothermal fields and exploration necessary for their adequate exploitation performed in the various regions of Italy, in *Geothermal Energy I*: United Nations Conf. New Sources Energy, Rome, 1961, Proc., v. 2, p. 117-133.
- , Cataldi, R., Mouton, J., and Scandellari, F., 1965, *Prospezione delle anomalie geotermiche e sua applicazione alla regione Amiata: l'Industria Mineraria*, v. 16, p. 1-15.
- Cataldi, R., 1967, Remarks on the geothermal research in the region of Monte Amiata (Tuscany-Italy): *Bull. Volcanol.*, v. 30, p. 243-270.
- , Ferrara, G. C., Stefani, G., and Tongiorgi, E., 1969, Contribution to the knowledge of the geothermal field of Larderello (Tuscany, Italy). Remarks on the Carboli area: *Bull. Volcanol.*, v. 33, no. 1, p. 1-27.
- Craig, H., 1963, The isotopic geochemistry of water and carbon in geothermal areas, in *Nuclear geology on geothermal areas*, Spoleto: Consiglio Nazionale delle Ricerche, Laboratorio di geologia nucleare, Pisa, p. 17-53.
- , 1966, Superheated steam and mineral-water interactions in geothermal areas: *Am. Geophys. Union Trans.*, v. 47, p. 204-205.
- , Boato, Giovanni, and White, D. E., 1956, Isotopic geochemistry of thermal waters: *Natl. Acad. Sci.*, no. 400, p. 29-38.
- Dall'Aglio, M., DaRoit, R., Orlandi, C., and Tonani, F., 1966, *Prospezione geochemical del mercurio—distribuzione del mercurio nelle alluvioni della Toscana: Industria Mineraria*, v. 17, p. 391-398.
- Dickson, F. W., and Tunell, George, 1968, Mercury and antimony deposits associated with active hot springs in the western United States, in Ridge, J. D., Editor, *Ore deposits of the United States 1933-1967* (Graton-Sales volume), v. 2: New York, Am. Inst. Mining Metall. Petroleum Engineers, Inc., p. 1673-1701.
- Eastman, G. Yale, 1968, The heat pipe: *Scientific American*, v. 218, p. 38-46.
- Elder, J. W., 1965, Physical processes in geothermal areas, in W. H. K. Lee, Editor, *Terrestrial heat flow: Am. Geophys. Union Mon.*, ser. 8, p. 211-239.
- Ellis, A. J., and Mahon, W. A. J., 1964, Natural hydrothermal systems and experimental hot-water/rock interactions: *Geochim. et Cosmochim. Acta*, v. 28, p. 1323-1357.
- , 1967, Natural hydrothermal systems and experimental hot water/rock interactions (Pt. II): *Geochim. et Cosmochim. Acta*, v. 31, no. 4, p. 519-538.

- Facca, Giancarlo, and Tonani, Franco, 1964, Theory and technology of a geothermal field: *Bull. Volcanol.*, v. 27, p. 143-189.
- , 1967, The self-sealing geothermal field: *Bull. Volcanol.*, v. 30, p. 271-273.
- Fenner, C. N., 1936, Bore-hole investigations in Yellowstone Park: *Jour. Geol.*, v. 44, no. 2, pt. 2, p. 225-315.
- Ferrara, G. C., Ferrara, G., and Gonfiantini, R., 1963, Carbon isotopic composition of carbon dioxide and methane from steam jets of Tuscany, in Tongiorgi, Editor, *Nuclear geology on geothermal areas*, Spoleto 1963: Pisa, Consiglio Nazionale Delle Ricerche, Laboratorio di Geologia Nucleare, p. 277-284.
- Fournier, R. O., and Rowe, J. J., 1966, Estimation of underground temperatures from the silica content of water from hot springs and wet-steam wells: *Am. Jour. Sci.*, v. 264, no. 9, p. 685-697.
- , and Truesdell, A. H., 1970, A device for measuring down-hole pressures and sampling fluids from geothermal wells: *Jour. Sci. Instruments* [in press].
- Haas, J. L., Jr., 1970, The effect of salinity on the maximum thermal gradient of a hydrothermal system of hydrostatic pressure and near boiling: *ECON. GEOL.*, in press.
- Hayakawa, M., 1969, Anomalous heat flow in Japan: *Bull. Volcanol.*, v. 33, no. 1, p. 57-68.
- Helgeson, H. C., 1968, Geologic and thermodynamic characteristics of the Salton Sea geothermal system: *Am. Jour. Sci.*, v. 266, p. 129-166.
- Holland, H. D., 1967, Gangue minerals in hydrothermal deposits, in H. L. Barnes, Editor, *Geochemistry of Hydrothermal Ore Deposits*: New York, Holt, Rinehart, and Winston, Inc., p. 382-436.
- James, Russell, 1968, Wairakei and Larderello; geothermal power systems compared: *New Zealand Jour. Sci. and Technology*, v. 11, p. 706-719.
- Keenan, J. H., and Keyes, F. G., 1936, *Thermodynamic Properties of Steam*: New York, John Wiley and Sons, 89 p.
- Krauskopf, K. B., 1964, The possible role of volatile metal compounds in ore genesis: *ECON. GEOL.*, v. 59, p. 22-45.
- Lee, W. H. K., and Uyeda, S., 1965, Review of heat flow data, in W. H. K. Lee, Editor, *Terrestrial heat flow*: Am. Geophys. Union, Geophys. Mon. 8, p. 87-190.
- Lowell, J. D., and Guilbert, J. M., 1970, Lateral and vertical alteration-mineralization zoning in porphyry ore deposits: *ECON. GEOL.*, v. 65, p. 373-408.
- Marinelli, G., 1969, Some geological data on the geothermal areas of Tuscany: *Bull. Volcanol.*, v. 33, no. 1, p. 319-334.
- McNitt, J. R., 1963, Exploration and development of geothermal power in California: *Calif. Div. Mines and Geology Spec. Rept.* 75, 45 p.
- Mercado, Sergio, 1969, Chemical changes in geothermal well M-20, Cerro Prieto, Mexico: *Geol. Soc. America Bull.*, v. 80, p. 2623-2629.
- Muffler, L. J. P., White, D. E., and Truesdell, A. H., 1971, Hydrothermal explosion craters in Yellowstone National Park: *Geol. Soc. America Bull.* [in press].
- Nakamura, Hisayoshi, and Sumi, Kiyoshi, 1967, Geological study of Matsukawa geothermal area, northeast Japan: *Japan Geol. Survey Bull.*, v. 18, no. 2, p. 58-72.
- Otte, Carel, and Dondanville, R. F., 1968, Geothermal developments in The Geysers area, California [abs.]: *Am. Assoc. Petroleum Geologists Bull.*, v. 52, p. 575.
- Penta, Francesco, 1959, *Sulle Origini del Vapore Acqueo Naturale e Sull' attuale Stato delle Relative Ricerche (Ricerche per "forze Endogene")*: *La Ricerca Scientifica*, v. 29°, num. 12, p. 2521-2536.
- Saito, Masatsugu, 1964, Known geothermal fields in Japan, in *Geothermal Energy I: United Nations Conf. New Sources Energy*, Rome, 1961, *Proc.*, v. 2, p. 367-373.
- Schoen, Robert, and Ehrlich, G. G., 1968, Bacterial origin of sulfuric acid in sulfurous hot springs: *Internat. Geol. Cong.*, 23d, Prague, v. 17, p. 171-178.
- Sheppard, S. M. F., Nielsen, R. L., and Taylor, H. P., Jr., 1969, Oxygen and hydrogen isotope ratios of clay minerals from porphyry copper deposits: *ECON. GEOL.*, v. 64, p. 755-777.
- Sourirajan, S., and Kennedy, G. C., 1962, The system H_2O - $NaCl$ at elevated temperatures and pressures: *Am. Jour. Sci.*, v. 260, p. 115-141.
- White, D. E., 1957a, Thermal waters of volcanic origin: *Geol. Soc. America Bull.*, v. 68, no. 12, p. 1637-1658.
- , 1957b, Magmatic, connate, and metamorphic waters: *Geol. Soc. America Bull.*, v. 68, p. 1659-1682.
- , 1964, Preliminary evaluation of geothermal area by geochemistry, geology, and shallow drilling, in *Geothermal Energy I: United Nations Conf. New Sources Energy*, Rome, 1961, *Proc.*, v. 2, p. 402-408.
- , 1967a, Some principles of geyser activity, mainly from Steamboat Springs, Nevada: *Am. Jour. Sci.*, v. 265, p. 641-648.
- , 1967b, Mercury and base-metal deposits with associated thermal and mineral waters, in Barnes, H. L., Editor, *Geochemistry of Hydrothermal Ore Deposits*: New York, Holt, Rinehart, and Winston, Inc., p. 575-631.
- , 1968a, Environments of generation of base-metal ore deposits: *ECON. GEOL.*, v. 63, no. 4, p. 301-335.
- , 1968b, Hydrology, activity, and heat flow of the Steamboat Springs thermal system, Washoe County, Nevada: *U. S. Geol. Survey Prof. Paper* 458-C, p. C1-C109.
- , 1969, Rapid heat-flow surveying of geothermal areas, utilizing individual snowfalls as calorimeters: *Jour. Geophys. Research*, v. 74, no. 22, p. 5191-5201.
- , Brannock, W. W., and Murata, K. J., 1956, Silica in hot-spring waters: *Geochim. et Cosmochim. Acta*, v. 10, p. 27-59.
- , Hem, J. D., and Waring, G. A., 1963, Chemical compositions of subsurface waters, in *Data of geochemistry*: *U. S. Geol. Survey Prof. Paper* 440-F, 67 p.
- Wilson, S. H., 1955, Chemical investigations, in Grange, L. I., Editor, *Geothermal steam for power in New Zealand*, chap. 4: *New Zealand Dept. Sci. and Indus. Research Bull.* 117, p. 27-42.

APPENDIX H

Classification of Public Lands Valuable for Geothermal Steam and Associated Geothermal Resources



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Classification of Public Lands Valuable for Geothermal Steam and Associated Geothermal Resources

By L.H. GODWIN, L.B. HAIGLER, R.L. RIOUX,
D.E. WHITE, L.J.P. MUFFLER, and R.G. WAYLAND

GEOLOGICAL SURVEY CIRCULAR 647

*Standards used by the Geological Survey to
classify public lands for retention and for
competitive leasing of geothermal steam
and associated geothermal resources*

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H-1

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Classification of Public Lands Valuable for Geothermal Steam and Associated Geothermal Resources

By L. H. Godwin, L. B. Haigler, R. L. Rioux, D. E. White, L. J. P. Muffler, and R. G. Wayland

ABSTRACT

The Organic Act of 1879 (43 U.S.C. 31) that established the U.S. Geological Survey provided, among other things, for the classification of the public lands and for the examination of the geological structure, mineral resources, and products of the national domain. In order to provide uniform executive action in classifying public lands, standards for determining which lands are valuable for mineral resources, for example, leasable mineral lands, or for other products are prepared by the U.S. Geological Survey. This report presents the classification standards for determining which Federal lands are classifiable as geothermal steam and associated geothermal resources lands under the Geothermal Steam Act of 1970 (84 Stat. 1566).

The concept of a geothermal resources province is established for classification of lands for the purpose of retention in Federal ownership of rights to geothermal resources upon disposal of Federal lands. A geothermal resources province is defined as an area in which higher than normal temperatures are likely to occur with depth and in which there is a reasonable possibility of finding reservoir rocks that will yield steam or heated fluids to wells.

The determination of a "known geothermal resources area" is made after careful evaluation of the available geologic, geochemical, and geophysical data and any evidence derived from nearby discoveries, competitive interests, and other indicia. The initial classification required by the Geothermal Steam Act of 1970 is presented.

INTRODUCTION

The Organic Act of 1879 (43 U.S.C. 31) that established the U.S. Geological Survey provided, among other things, for the classification of the public lands and for the examination of the geological structure, mineral resources, and other products of the national domain. With the enactment of the Geothermal Steam Act of 1970, that authority and responsibility now includes, without limitation,

to the same extent as in classifying lands under the mineral leasing laws, the authority and responsibility to classify lands as valuable for geothermal steam and associated geothermal resources. Land is so classified in order to reserve or retain those substances in Federal ownership and to determine for the Department of the Interior which lands are included within "known geothermal resources areas" and thus subject to the competitive leasing provisions of the Geothermal Steam Act of 1970 (84 Stat. 1566).

The Geothermal Steam Act of 1970 (see "Appendix"), effective December 24, 1970, includes the following provisions:

SEC. 2(e). "known geothermal resources area" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose.

SEC. 4. If lands to be leased under this Act are within any known geothermal resources area, they shall be leased to the highest responsible qualified bidder by competitive bidding under regulations formulated by the Secretary. If the lands to be leased are not within any known geothermal resources area, the qualified person first making application for the lease shall be entitled to a lease of such lands without competitive bidding. * * *

SEC. 21(a). Within one hundred and twenty days after the effective date of this Act, the Secretary shall cause to be published in the Federal Register a determination of all lands which were included within any known geothermal resources area on the effective date of the Act. He shall likewise publish in the Federal Register from time to time his determination of other known geothermal resources areas specifying in each case the date the lands were included in such area;

SEC. 25. As to any land subject to geothermal leasing under section 3 of this Act, all laws which either (a) provide for the disposal of land by patent or other form of conveyance or by grant or by operation of law subject to a reservation of any mineral or (b) prevent or restrict the disposal of such land because of the mineral character of the land, shall hereafter be deemed to embrace geothermal steam and associated geothermal resources as a substance which either *must be reserved or must prevent or restrict the disposal of such land*, as the case may be. [Italics added.] This section shall not be construed to affect grants, patents, or other forms of conveyances made prior to the date of enactment of this Act.

In order to assure uniform executive action in the classification of leasable mineral lands in the public domain, standards for determining which lands are mineral lands have been prepared from time to time by the U.S. Geological Survey. It is the duty of the Geological Survey to use geologic expertise to identify those Federal lands that are underlain by or have a reasonable expectation of containing mineral deposits or other products that meet

or exceed the minimum limits set by the classification standards. Field examination and a study of subsurface, geophysical, and geochemical data may precede classification. Similarly, all known pertinent geologic facts are considered in determining which legal subdivisions of lands are classified as geothermal steam and associated resources lands.

The purpose of this report is to present the classification standards that have been established to implement the Geothermal Steam Act of 1970. Figures 1 and 2 show those areas which include, in part, Federal lands classified as known geothermal resources areas that may be leased only competitively to the highest qualified bidder and those lands classified as valuable prospectively for the purpose of retention of geothermal rights in Federal ownership upon disposal of the lands. Table 1 lists the known geothermal resources areas effective December 24, 1970.

TABLE 1.—Known geothermal resources areas

[Number corresponds to location shown in fig. 1 or 2. Detailed land descriptions of these areas have been published in the "Federal Register," v. 36, p. 5626, March 25, 1971; v. 36, p. 6118, April 2, 1971; v. 36, p. 6441, April 3, 1971; v. 36, p. 7319, April 17, 1971; and v. 36, p. 7759, April 24, 1971]

Locality	Name	Locality	Name
<i>Alaska</i>		<i>Nevada—Continued</i>	
1.....	Pilgrim Springs	4.....	Steamboat Springs
2.....	Geyser Spring Basin and Okmok Caldera	5.....	Brady Hot Springs
<i>California</i>		6.....	Stillwater-Soda Lake
1.....	The Geysers	7.....	Darrough Hot Springs
2.....	Salton Sea	8.....	Gerlach
3.....	Mono-Long Valley	9.....	Moana Springs
4.....	Calistoga	10.....	Double Hot Springs
5.....	Lake City	11.....	Wabuska
6.....	Wendel-Amedee	12.....	Monte Neva
7.....	Coso Hot Springs	13.....	Elko Hot Springs
8.....	Lassen	<i>New Mexico</i>	
9.....	Glass Mountain	1.....	Baca Location No. 1
10.....	Sespe Hot Springs	<i>Oregon</i>	
11.....	Heber	1.....	Breitenbush Hot Springs
12.....	Brawley	2.....	Crump Geyser
13.....	Dunes	3.....	Vale Hot Springs
14.....	Glamis	4.....	Mount Hood
<i>Idaho</i>		5.....	Lakeview
1.....	Yellowstone	6.....	Carey Hot Springs
2.....	Frazier	7.....	Klamath Falls
<i>Montana</i>		<i>Utah</i>	
1.....	Yellowstone	1.....	Crater Springs
<i>Nevada</i>		2.....	Roosevelt
1.....	Beowawe	<i>Washington</i>	
2.....	Fly Ranch	1.....	Mount St. Helens
3.....	Leach Hot Springs		

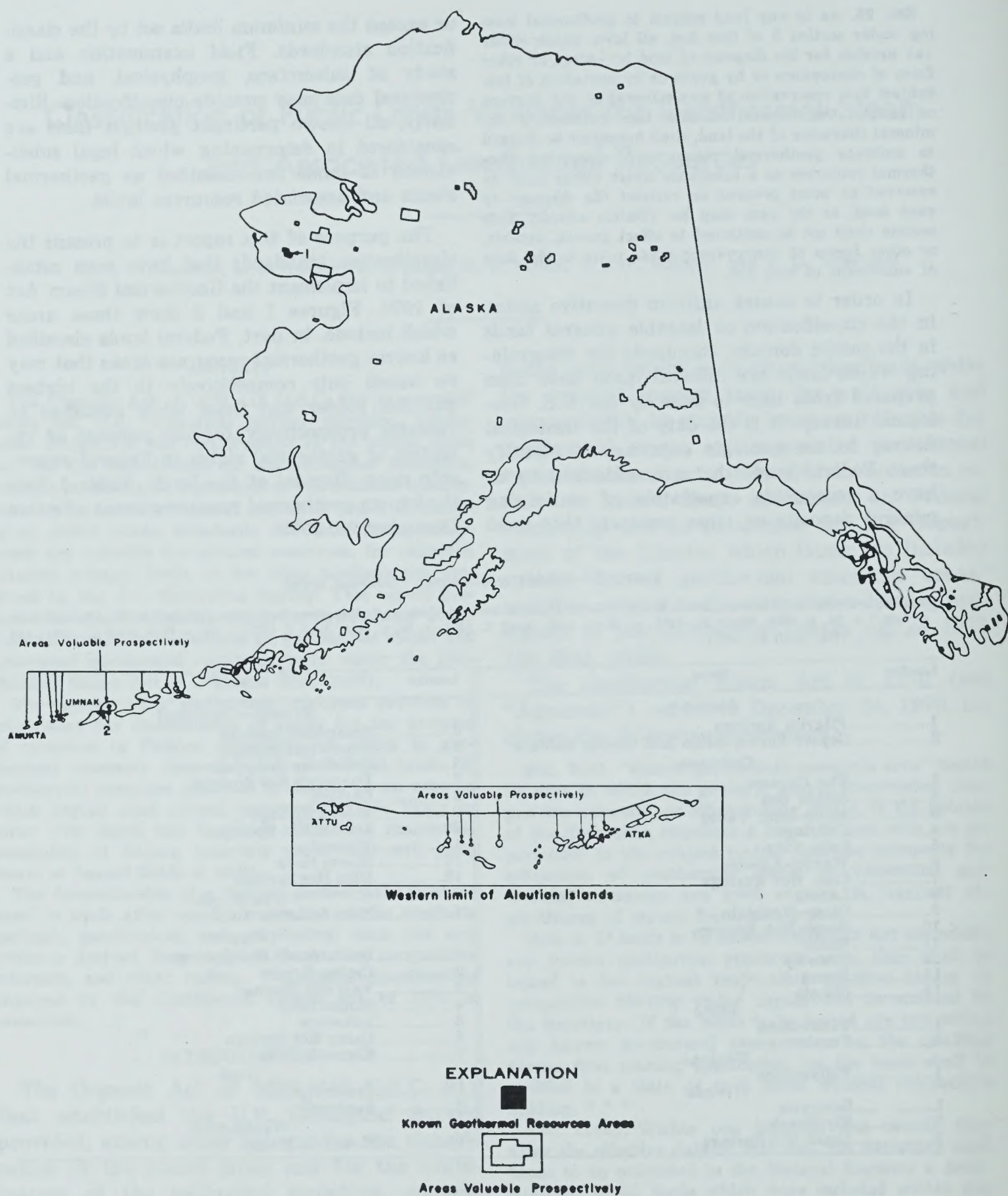


FIGURE 1.—Map of Alaska showing lands classified for geothermal resources effective December 24, 1970. Numbers correspond to areas listed in table 1.

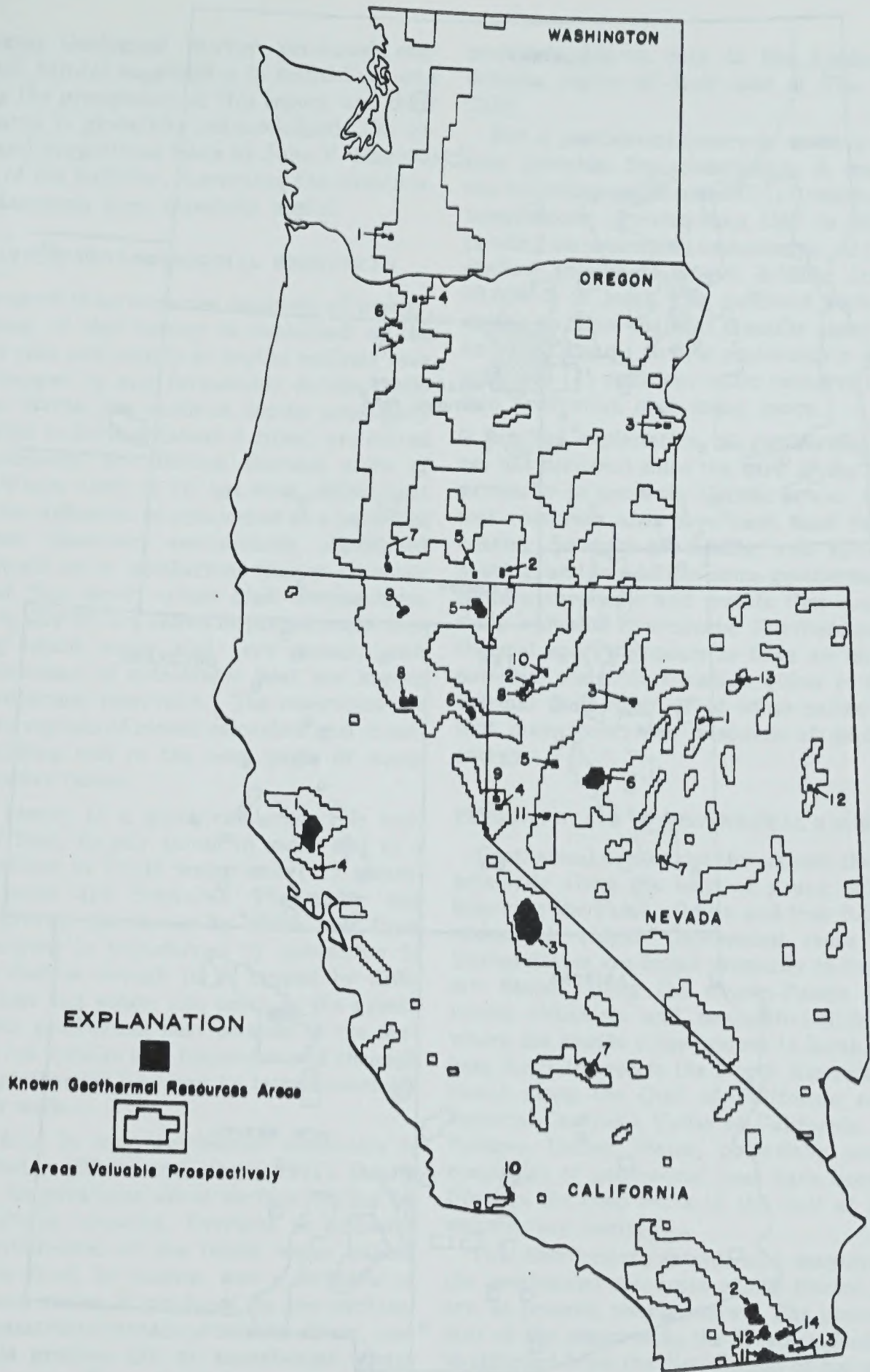
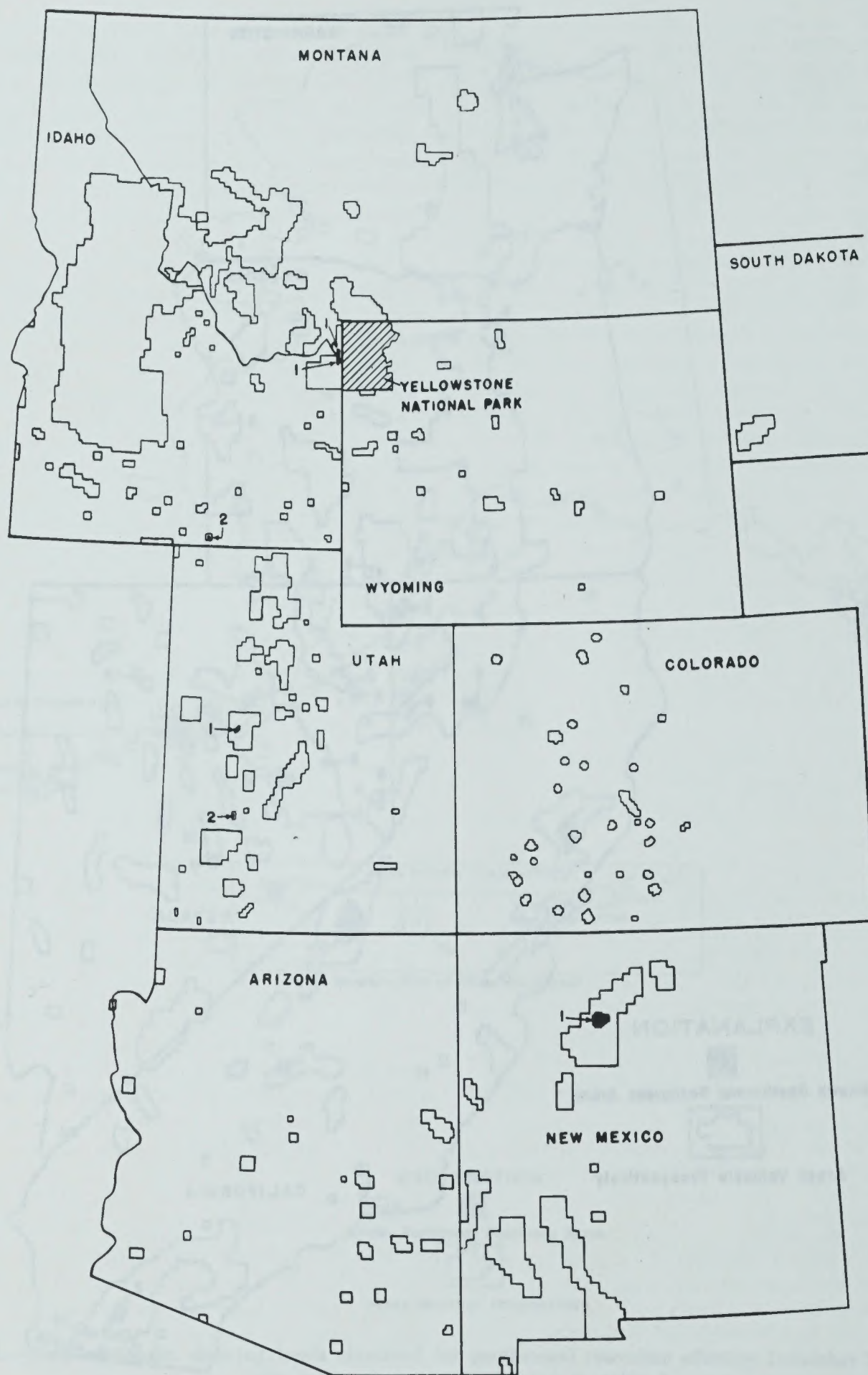


FIGURE 2.—Map of the Western United States showing lands classified for geothermal



resources effective December 24, 1970. Numbers correspond to areas listed in table 1.

Several Geological Survey personnel contributed helpful suggestions in critical reviews during the preparation of this report, and their assistance is gratefully acknowledged. The review and suggestions made by John F. Hughes, Office of the Solicitor, concerning the classification standards were especially useful.

NATURE OF GEOTHERMAL RESOURCES

The earth is an immense reservoir of energy, but most of this energy is contained in the earth's core and mantle at depths unlikely ever to be tapped by any foreseeable drilling technology. Within the earth at depths potentially accessible to drilling (about 6 miles) are stored approximately 10^{24} British thermal units of heat (White, 1965, p. 2), but most of this heat is far too diffuse to be considered as a potential resource. However, economically significant concentrations of geothermal energy do occur in local "hot spots" where high temperatures (150° to 650°F) are found in porous rocks containing liquid water and (or) steam; such concentrations of extractable heat are known as "geothermal reservoirs." The reservoirs are found in regions of recent volcanism and mountain-building and in the deep parts of many sedimentary basins.

The energy in a geothermal reservoir consists of heat, largely stored in rocks and to a lesser extent in liquid water and (or) steam-filling pores and fractures. The water and steam provide the means by which heat from deep sources is transferred by convection to depths shallow enough to be tapped by drilling. Water and steam also serve as the agents by which geothermal heat escapes at the surface in hot springs and fumaroles and through which geothermal heat can be tapped commercially by wells.

The fluid in most geothermal reservoirs is liquid water (White and others, 1971) that is held at temperatures above surface boiling by the confining pressure. Decrease in pressure upon withdrawal of the liquid water causes steam to form by boiling, and a mixture of steam and water is produced at the surface. A few reservoirs contain primarily steam, and the wells produce dry or superheated steam with no water. These dry steam reservoirs are

positively known only in the Larderello-Mt. Amiata region of Italy and at The Geysers, Calif.

For a geothermal reservoir to have appreciable potential for exploitation, it must meet the following requirements: (1) relatively high temperature (greater than 150° to 400°F , depending on processing technology), (2) a depth shallow enough to permit drilling (currently 10,000 ft or less), (3) sufficient rock permeability to allow the heat transfer agent (water and (or) steam) to flow continuously at a high rate, and (4) sufficient water recharge to maintain production over many years.

Limited exploitation of geothermal resources has occurred since the turn of the century, primarily to generate electric power. Geothermal resources also have been used for space heating, product processing, and agricultural heating, and in addition some geothermal fluids contain chemicals and metals that are potentially valuable byproducts. Furthermore, geothermal energy appears to have an important potential use in desalination, either of the geothermal fluid itself or of other saline waters that may occur near a source of geothermal energy.

PRESENT STATE OF GEOTHERMAL KNOWLEDGE

Geothermal areas exist throughout the world, primarily along the belts of young volcanism that ring the Pacific Ocean and that follow the midoceanic ridges. Geothermal areas of the United States are found primarily in the Western States, along the circum-Pacific belt of young volcanism and mountain-building and where the Pacific ridge system (a locus of high heat flow) intersects the North American continent along the Gulf of California and the Imperial-Coachella Valley of California. In the Eastern United States, potentially economic reservoirs of geothermal heat have been identified in the deep parts of the Gulf of Mexico sedimentary basin.

The distribution, extent, and magnitude of the geothermal resources of the United States are, at present, poorly known. The general extent of the resource in the Western States can be inferred from the distribution of hot springs and in a more general way from the distribu-

tion of young volcanic rocks. In the past, geothermal exploration was primarily on sites identified by hot springs (an exploration method analogous to the primitive oil exploration methods of the turn of the century when oil fields could be located only by finding surface oil seeps). Available geologic and geochemical techniques have not been used adequately in discovering and evaluating new fields, and geophysical principles and techniques are only now beginning to be adapted to geothermal exploration.

Knowledge of the characteristics and parameters of individual geothermal systems in the United States has come from exploratory drilling in about 40 hot-spring areas (J. B. Koenig, "Geothermal Exploration in the Western United States": Paper II/19, United Nations Symposium on the Development and Utilization of Geothermal Resources, Pisa, Italy, September 1970), from developmental drilling (mainly at The Geysers of northern California and the Salton Sea in southern California), and from scientific studies of a few major thermal-spring areas, supplemented by shallow research drilling. Extrapolation of knowledge from other countries, mainly New Zealand, Italy, and Iceland, has proven useful, but techniques for estimating the size and power potential of geothermal sites prior to drilling are only beginning to be developed. Techniques for efficiently utilizing all the energy produced from geothermal wells (that is, by desalination or by two-phase generation) are only beginning to be investigated and developed.

CLASSIFICATION FACTORS FOR RETENTION

The petroleum province is an established concept in classification of oil and gas lands for purposes of retention of Federal mineral rights upon disposal of public lands. A geothermal resources province (GRP) similar in concept to a petroleum province is necessary to define those areas valuable prospectively for geothermal steam and associated geothermal resources.

A geothermal resources province is an area in which higher than normal temperatures are likely to occur with depth and there is a reasonable possibility of finding reservoir rocks that will yield steam or heated fluids to wells.

In most prospective areas, data on geothermal gradients and conductive heat flow are scarce. Adequate temperature-depth data exist only in sedimentary basins that have been extensively explored for oil and gas. Most of these basins are characterized by nearly "normal" geothermal gradients rather than the abnormally high rates needed for development of geothermal energy.

The present-day use of geothermal energy includes generation of electricity, manufacturing, agriculture, and space heating. The minimum present-day use for geothermal resources is the exploitation of stored heat energy for space heating. Geothermal fluids used for space heating are generally delivered at above 100°F and are available at the surface or at shallow depths below the surface. S. S. Einarsson ("Utilization of Low Enthalpy Water for Space Heating, Industrial, Agricultural and Other Uses": Rapporteur rept., Sec. X, United Nations Symposium on the Development and Utilization of Geothermal Resources, Pisa, Italy, September 1970) reported use of 118°F water in space heating in Olafsfjordhur, Iceland, and 104°F water in Japan. S. H. Ross ("Geothermal Potential of Idaho": Paper II/1, United Nations Symposium on the Development and Utilization of Geothermal Resources, Pisa, Italy, September 1970) reported use of 104°F water for agricultural purposes in Idaho. Because a heat exchanger can extract the heat from the geothermal fluid, the chemical composition or the corrosiveness of the fluid is not necessarily a controlling factor in classification.

The classification of geothermal resources provinces is based on geologic inference similar to that used by the Geological Survey in classifying lands for retention of oil and gas mineral rights and should provide adequate protection against alienation of leasable geothermal resources. One or more of the following indicia are necessary for the retention classification of lands in geothermal resources provinces:

1. Volcanism of late Tertiary or Quaternary age—especially caldera structures, cones, and volcanic vents.
2. Geysers, fumaroles, mud volcanoes, or thermal springs at least 40°F higher than

average ambient temperature.

3. Subsurface geothermal gradients generally in excess of two times normal, as reflected in deep water wells, oil well tests, and other test holes.

CLASSIFICATION FACTORS FOR A KNOWN GEOTHERMAL RESOURCES AREA

Lands shall be classified as a "known geothermal resources area" (KGRA) when "the prospects for extraction of geothermal steam or associated geothermal resources from an area are good enough to warrant expenditures of money for that purpose." The accumulation of geothermal resources is in some ways similar to the accumulation of oil and gas resources, and only a test hole can establish with certainty the existence of adequate temperatures, pressures, and production capacity of an area. However, the definition of a "known geothermal resources area" departs from the concept of a "known geologic structure of a producing oil or gas field" (Finley, 1959) in that it does *not* require a producible well. Thus, any relevant data and information pertaining to the criteria enumerated in sec. 2(e) of the Geothermal Steam Act can be considered in determining whether lands are included within any KGRA.

The extent of a KGRA is influenced by such geologic factors as the pattern of temperature gradient, structure, stratigraphy, porosity, conductivity, permeability, heat source, and rate of recharge of fluids. The determination of a KGRA is made after evaluating the net effect of all geologic, geochemical, and geophysical data and any evidence derived from nearby discoveries, competitive interests, and other indicia.

GEOLOGY (INCLUDING GEOPHYSICAL AND GEOCHEMICAL DATA)

The following kinds of data, considered together, indicate that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose:

1. Siliceous sinter and natural geysers both imply high subsurface temperatures, generally 350°F or greater (D. E. White, "Geochemistry Applied to the Discovery,

Evaluation and Exploitation of Geothermal Energy Resources": Rapporteur rept., Sec. V, United Nations Symposium on the Development and Utilization of Geothermal Resources, Pisa, Italy, September 1970) in hot-water systems, because of relationships generally existing between temperature and SiO_2 content of liquid water.

2. The temperatures of fumaroles, thermal springs, and mud volcanoes provide minimum subsurface temperatures.
3. The SiO_2 content of spring water is a very useful chemical geothermometer for indicating the reservoir temperatures of many hot-water systems (R. O. Fournier and A. H. Truesdell, "Chemical Indicators of Subsurface Temperature Applied to Hot Spring Waters of Yellowstone National Park, Wyoming, U.S.A.": Paper V/2, United Nations Symposium on the Development and Utilization of Geothermal Resources, Pisa, Italy, September 1970; D. E. White, see above).
4. The Na/K ratio in spring waters of many hot-water systems is also a useful chemical geothermometer when there is adequate knowledge of competing influences (D. E. White, see above).
5. Most known potential geothermal systems occur in or near volcanoes and calderas of late Tertiary or Quaternary age.
6. Abnormally high conductive heat flow and the geothermal gradient are the best indicators of deep, concealed geothermal reservoirs. Although specific limits have not yet been established, two to 10 times the world-wide average (heat flow of 1.5 microcalories per cm^2 per second; temperature gradient of 1°F per 100 ft) extended consistently over hundreds of feet of depth appears favorable.
7. The porosity and the permeability of a potential reservoir are important parameters but can be established only by drilling and testing. Where stratigraphic control of the reservoir fluid or steam by a caprock is expected, near-surface characteristics of the rocks may provide preliminary evaluations.
8. Electrical resistivity surveys are probably

the best geophysical means to geothermal evaluation available at this time, especially for the hot-water systems.

9. Magnetic, gravity, and airborne infrared geophysical surveys may provide useful supplemental data.
10. Other geophysical methods such as micro-seismic, seismic ground noise, electromagnetic, and telluric surveys may have significant future use in evaluation.

NEARBY DISCOVERIES

In classifying land as a KGRA, the discovery of a deposit of geothermal steam or associated geothermal resources in the vicinity of such lands is evaluated together with the available data concerning the other criteria enumerated in sec. 2(e) of the Act which are to be considered in classification action.

COMPETITIVE INTERESTS

Competitive interest is considered together with the available data concerning the other criteria enumerated in sec. 2(e) of the Act in classifying lands as being within a KGRA.

Available information which could be considered in determining the existence of competitive interest in connection with an application for a geothermal lease would include information concerning the existence of bona fide, allowable applications for geothermal leases which have been filed for all or any part of the lands sought under the application being considered, or for lands in the vicinity of the lands being sought. The circumstance that two or more companies are exploring, applying for, or actually leasing available State or fee lands for geothermal resources in the same general area might constitute competitive interest that

would affect Federal lands considered valuable prospectively for geothermal resources and could warrant its classification as a KGRA. The absence of indicated competitive interest, however, is, in and of itself, no bar to classification of lands for inclusion in a KGRA and would not be sufficient to warrant revocation of a KGRA.

OTHER INDICIA

Any pertinent engineering and (or) economic data may be considered together with other available data relating to the criteria enumerated in sec. 2(e) of the Geothermal Steam Act in classifying land for inclusion in a KGRA.

In defining the lands valuable for geothermal resource development under the proposed withdrawal published in the "Federal Register," v. 32, p. 4506, March 24, 1967, the Director of the Geological Survey used primarily a combination of the then known geologic and geophysical data as well as temperature and chemical data, in part supplied by industry, from areas that had been drilled in exploration for geothermal steam. Future developments will provide substantially more geologic and geophysical information as well as engineering and economic data. These factors will be considered in future determinations of KGRA's.

REFERENCES CITED

- Finley, E. A., 1959, The definition of known geologic structures of producing oil and gas fields: U.S. Geol. Survey Circ. 419, 6 p.
- White, D. E., 1965, Geothermal energy: U.S. Geol. Survey Circ. 519, 17 p.
- White, D. E., Muffler, L. J. P., and Truesdell, A. H., 1971, Vapor-dominated hydrothermal systems, compared with hot-water systems: Econ. Geology, v. 66, no. 1, p. 75-97.



Public Law 91-581
91st Congress, S. 368
December 24, 1970

An Act

84 STAT. 1566

To authorize the Secretary of the Interior to make disposition of geothermal steam and associated geothermal resources, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Geothermal Steam Act of 1970".

Geothermal Steam
Act of 1970.
Definitions.

SEC. 2. As used in this Act, the term—

- (a) "Secretary" means the Secretary of the Interior;
- (b) "geothermal lease" means a lease issued under authority of this Act;
- (c) "geothermal steam and associated geothermal resources" means (i) all products of geothermal processes, embracing indigenous steam, hot water and hot brines; (ii) steam and other gases, hot water and hot brines resulting from water, gas, or other fluids artificially introduced into geothermal formations; (iii) heat or other associated energy found in geothermal formations; and (iv) any byproduct derived from them;
- (d) "byproduct" means any mineral or minerals (exclusive of oil, hydrocarbon gas, and helium) which are found in solution or in association with geothermal steam and which have a value of less than 75 per centum of the value of the geothermal steam or are not, because of quantity, quality, or technical difficulties in extraction and production, of sufficient value to warrant extraction and production by themselves;
- (e) "known geothermal resources area" means an area in which the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary, engender a belief in men who are experienced in the subject matter that the prospects for extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose.

SEC. 3. Subject to the provisions of section 15 of this Act, the Secretary of the Interior may issue leases for the development and utilization of geothermal steam and associated geothermal resources (1) in lands administered by him, including public, withdrawn, and acquired lands, (2) in any national forest or other lands administered by the Department of Agriculture through the Forest Service, including public, withdrawn, and acquired lands, and (3) in lands which have been conveyed by the United States subject to a reservation to the United States of the geothermal steam and associated geothermal resources therein.

Leases.

SEC. 4. If lands to be leased under this Act are within any known geothermal resources area, they shall be leased to the highest responsible qualified bidder by competitive bidding under regulations formulated by the Secretary. If the lands to be leased are not within any known geothermal resources area, the qualified person first making application for the lease shall be entitled to a lease of such lands without competitive bidding. Notwithstanding the foregoing, at any time within one hundred and eighty days following the effective date of this Act:

Bids.

Conversion.

- (a) with respect to all lands which were on September 7, 1965, subject to valid leases or permits issued under the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181 et seq.), or under the Mineral Leasing Act of Acquired Lands, as amended (30 U.S.C. 351, 358), or to existing mining claims located on or prior to September 7, 1965, the lessees or permittees or claimants or their successors in interest who are qualified to hold geothermal

41 Stat. 437.

61 Stat. 913.

leases shall have the right to convert such leases or permits or claims to geothermal leases covering the same lands;

(b) where there are conflicting claims, leases, or permits therefor embracing the same land, the person who first was issued a lease or permit, or who first recorded the mining claim shall be entitled to first consideration;

(c) with respect to all lands which were on September 7, 1965, the subject of applications for leases or permits under the above Acts, the applicants may convert their applications to applications for geothermal leases having priorities dating from the time of filing of such applications under such Acts;

Acresage
limitation.

(d) no person shall be permitted to convert mineral leases, permits, applications therefor, or mining claims for more than 10,240 acres; and

(e) the conversion of leases, permits, and mining claims and applications for leases and permits shall be accomplished in accordance with regulations prescribed by the Secretary. No right to conversion to a geothermal lease shall accrue to any person under this section unless such person shows to the reasonable satisfaction of the Secretary that substantial expenditures for the exploration, development, or production of geothermal steam have been made by the applicant who is seeking conversion, on the lands for which a lease is sought or on adjoining, adjacent, or nearby Federal or non-Federal lands.

(f) with respect to lands within any known geothermal resources area and which are subject to a right to conversion to a geothermal lease, such lands shall be leased by competitive bidding: *Provided*, That, the competitive geothermal lease shall be issued to the person owning the right to conversion to a geothermal lease if he makes payment of an amount equal to the highest bona fide bid for the competitive geothermal lease, plus the rental for the first year, within thirty days after he receives written notice from the Secretary of the amount of the highest bid.

Lease
provisions.
Royalties.

SEC. 5. Geothermal leases shall provide for—

(a) a royalty of not less than 10 per centum or more than 15 per centum of the amount or value of steam, or any other form of heat or energy derived from production under the lease and sold or utilized by the lessee or reasonably susceptible to sale or utilization by the lessee;

41 Stat. 437.

(b) a royalty of not more than 5 per centum of the value of any byproduct derived from production under the lease and sold or utilized or reasonably susceptible of sale or utilization by the lessee, except that as to any byproduct which is a mineral named in section 1 of the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181), the rate of royalty for such mineral shall be the same as that provided in that Act and the maximum rate of royalty for such mineral shall not exceed the maximum royalty applicable under that Act;

Rent.

(c) payment in advance of an annual rental of not less than \$1 per acre or fraction thereof for each year of the lease. If there is no well on the leased lands capable of producing geothermal resources in commercial quantities, the failure to pay rental on or before the anniversary date shall terminate the lease by operation of law: *Provided, however*, That whenever the Secretary discovers that the rental payment due under a lease is paid timely but the amount of the payment is deficient because of an error or other reason and the deficiency is nominal, as determined by the Secretary pursuant to regulations prescribed by him, he shall notify the lessee of the deficiency and such lease shall not automatically terminate unless

the lessee fails to pay the deficiency within the period prescribed in the notice: *Provided further*, That, where any lease has been terminated automatically by operation of law under this section for failure to pay rental timely and it is shown to the satisfaction of the Secretary of the Interior that the failure to pay timely the lease rental was justifiable or not due to a lack of reasonable diligence, he in his judgment may reinstate the lease if--

(1) a petition for reinstatement, together with the required rental, is filed with the Secretary of the Interior; and

(2) no valid lease has been issued affecting any of the lands in the terminated lease prior to the filing of the petition for reinstatement; and

(d) a minimum royalty of \$2 per acre or fraction thereof in lieu of rental payable at the expiration of each lease year for each producing lease, commencing with the lease year beginning on or after the commencement of production in commercial quantities. For the purpose of determining royalties hereunder the value of any geothermal steam and byproduct used by the lessee and not sold and reasonably susceptible of sale shall be determined by the Secretary, who shall take into consideration the cost of exploration and production and the economic value of the resource in terms of its ultimate utilization.

SEC. 6. (a) Geothermal leases shall be for a primary term of ten years. If geothermal steam is produced or utilized in commercial quantities within this term, such lease shall continue for so long thereafter as geothermal steam is produced or utilized in commercial quantities, but such continuation shall not exceed an additional forty years.

(b) If, at the end of such forty years, steam is produced or utilized in commercial quantities and the lands are not needed for other purposes, the lessee shall have a preferential right to a renewal of such lease for a second forty-year term in accordance with such terms and conditions as the Secretary deems appropriate.

(c) Any lease for land on which, or for which under an approved cooperative or unit plan of development or operation, actual drilling operations were commenced prior to the end of its primary term and are being diligently prosecuted at that time shall be extended for five years and so long thereafter, but not more than thirty-five years, as geothermal steam is produced or utilized in commercial quantities. If, at the end of such extended term, steam is being produced or utilized in commercial quantities and the lands are not needed for other purposes, the lessee shall have a preferential right to a renewal of such lease for a second term in accordance with such terms and conditions as the Secretary deems appropriate.

(d) For purposes of subsection (a) of this section, production or utilization of geothermal steam in commercial quantities shall be deemed to include the completion of one or more wells producing or capable of producing geothermal steam in commercial quantities and a bona fide sale of such geothermal steam for delivery to or utilization by a facility or facilities not yet installed but scheduled for installation not later than fifteen years from the date of commencement of the primary term of the lease.

(e) Leases which have extended by reasons of production, or which have produced geothermal steam, and have been determined by the Secretary to be incapable of further commercial production and utilization of geothermal steam may be further extended for a period of not more than five years from the date of such determination but only for so long as one or more valuable byproducts are produced in commercial quantities. If such byproducts are leasable under the Mineral Leasing Act of February 25, 1920, as amended (30 U.S.C. 181, et seq.), or under the Mineral Leasing Act for Acquired Lands (30 U.S.C.

Term.

Limitation.

Renewal.

Extension.

41 Stat. 437.

61 Stat. 913.

351-358), and the leasehold is primarily valuable for the production thereof, the lessee shall be entitled to convert his geothermal lease to a mineral lease under, and subject to all the terms and conditions of, such appropriate Act upon application at any time before expiration of the lease extension by reason of byproduct production. The lessee shall be entitled to locate under the mining laws all minerals which are not leasable and which would constitute a byproduct if commercial production or utilization of geothermal steam continued. The lessee in order to acquire the rights herein granted him shall complete the location of mineral claims within ninety days after the termination of the lease for geothermal steam. Any such converted lease or the surface of any mining claim located for geothermal byproducts mineral affecting lands withdrawn or acquired in aid of a function of a Federal department or agency, including the Department of the Interior, shall be subject to such additional terms and conditions as may be prescribed by such department or agency with respect to the additional operations or effects resulting from such conversion upon adequate utilization of the lands for the purpose for which they are administered.

(f) Minerals locatable under the mining laws of the United States in lands subject to a geothermal lease issued under the provisions of this Act which are not associated with the geothermal steam and associated geothermal resources of such lands as defined in section 2(c) herein shall be locatable under said mining laws in accordance with the principles of the Multiple Mineral Development Act (68 Stat. 708; found in 30 U.S.C. 521 et seq.).

Leases,
acreage.

Limitation.

SEC. 7. A geothermal lease shall embrace a reasonably compact area of not more than two thousand five hundred and sixty acres, except where a departure therefrom is occasioned by an irregular subdivision or subdivisions. No person, association, or corporation, except as otherwise provided in this Act, shall take, hold, own, or control at one time, whether acquired directly from the Secretary under this Act or otherwise, any direct or indirect interest in Federal geothermal leases in any one State exceeding twenty thousand four hundred and eighty acres, including leases acquired under the provisions of section 4 of this Act.

Increase.

At any time after fifteen years from the effective date of this Act the Secretary, after public hearings, may increase this maximum holding in any one State by regulation, not to exceed fifty-one thousand two hundred acres.

Readjustment.

SEC. 8. (a) The Secretary may readjust the terms and conditions, except as otherwise provided herein, of any geothermal lease issued under this Act at not less than ten-year intervals beginning ten years after the date the geothermal steam is produced, as determined by the Secretary. Each geothermal lease issued under this Act shall provide for such readjustment. The Secretary shall give notice of any proposed readjustment of terms and conditions, and, unless the lessee files with the Secretary objection to the proposed terms or relinquishes the lease within thirty days after receipt of such notice, the lessee shall conclusively be deemed to have agreed with such terms and conditions. If the lessee files objections, and no agreement can be reached between the Secretary and the lessee within a period of not less than sixty days, the lease may be terminated by either party.

Notice.

(b) The Secretary may readjust the rentals and royalties of any geothermal lease issued under this Act at not less than twenty-year intervals beginning thirty-five years after the date geothermal steam is produced, as determined by the Secretary. In the event of any such readjustment neither the rental nor royalty may be increased by more than 50 per centum over the rental or royalty paid during the preceding period, and in no event shall the royalty payable exceed 22½ per centum. Each geothermal lease issued under this Act shall provide

for such readjustment. The Secretary shall give notice of any proposed readjustment of rentals and royalties, and, unless the lessee files with the Secretary objection to the proposed rentals and royalties or relinquishes the lease within thirty days after receipt of such notice, the lessee shall conclusively be deemed to have agreed with such terms and conditions. If the lessee files objections, and no agreement can be reached between the Secretary and the lessee within a period of not less than sixty days, the lease may be terminated by either party.

Notice.

(c) Any readjustment of the terms and conditions as to use, protection, or restoration of the surface of any lease of lands withdrawn or acquired in aid of a function of a Federal department or agency other than the Department of the Interior may be made only upon notice to, and with the approval of, such department or agency.

SEC. 9. If the production, use, or conversion of geothermal steam is susceptible of producing a valuable byproduct or byproducts, including commercially demineralized water for beneficial uses in accordance with applicable State water laws, the Secretary shall require substantial beneficial production or use thereof unless, in individual circumstances he modifies or waives this requirement in the interest of conservation of natural resources or for other reasons satisfactory to him. However, the production or use of such byproducts shall be subject to the rights of the holders of preexisting leases, claims, or permits covering the same land or the same minerals, if any.

Byproducts.

SEC. 10. The holder of any geothermal lease at any time may make and file in the appropriate land office a written relinquishment of all rights under such lease or of any legal subdivision of the area covered by such lease. Such relinquishment shall be effective as of the date of its filing. Thereupon the lessee shall be released of all obligations thereafter accruing under said lease with respect to the lands relinquished, but no such relinquishment shall release such lessee, or his surety or bond, from any liability for breach of any obligation of the lease, other than an obligation to drill, accrued at the date of the relinquishment, or from the continued obligation, in accordance with the applicable lease terms and regulations, (1) to make payment of all accrued rentals and royalties, (2) to place all wells on the relinquished lands in condition for suspension or abandonment, and (3) to protect or restore substantially the surface and surface resources.

Relinquishment.

SEC. 11. The Secretary, upon application by the lessee, may authorize the lessee to suspend operations and production on a producing lease and he may, on his own motion, in the interest of conservation suspend operations on any lease but in either case he may extend the lease term for the period of any suspension, and he may waive, suspend, or reduce the rental or royalty required in such lease.

Suspension.

SEC. 12. Leases may be terminated by the Secretary for any violation of the regulations or lease terms after thirty days notice provided that such violation is not corrected within the notice period, or in the event the violation is such that it cannot be corrected within the notice period then provided that lessee has not commenced in good faith within said notice period to correct such violation and thereafter to proceed diligently to correct such violation. Lessee shall be entitled to a hearing on the matter of such claimed violation or proposed termination of lease if request for a hearing is made to the Secretary within the thirty-day period after notice. The period for correction of violation or commencement to correct such violation of regulations or of lease terms, as aforesaid, shall be extended to thirty days after the Secretary's decision after such hearing if the Secretary shall find that a violation exists.

Leases,
termination.
Notice.

SEC. 13. The Secretary may waive, suspend, or reduce the rental or royalty for any lease or portion thereof in the interests of conservation and to encourage the greatest ultimate recovery of geothermal

Surface
land, use.

resources, if he determines that this is necessary to promote development or that the lease cannot be successfully operated under the lease terms.

SEC. 14. Subject to the other provisions of this Act, a lessee shall be entitled to use so much of the surface of the land covered by his geothermal lease as may be found by the Secretary to be necessary for the production, utilization, and conservation of geothermal resources.

SEC. 15. (a) Geothermal leases for lands withdrawn or acquired in aid of functions of the Department of the Interior may be issued only under such terms and conditions as the Secretary may prescribe to insure adequate utilization of the lands for the purposes for which they were withdrawn or acquired.

41 Stat. 1075;
62 Stat. 275.

(b) Geothermal leases for lands withdrawn or acquired in aid of functions of the Department of Agriculture may be issued only with the consent of, and subject to such terms and conditions as may be prescribed by, the head of that Department to insure adequate utilization of the lands for the purposes for which they were withdrawn or acquired. Geothermal leases for lands to which section 24 of the Federal Power Act, as amended (16 U.S.C. 818), is applicable, may be issued only with the consent of, and subject to, such terms and conditions as the Federal Power Commission may prescribe to insure adequate utilization of such lands for power and related purposes.

16 USC 1.

(c) Geothermal leases under this Act shall not be issued for lands administered in accordance with (1) the Act of August 25, 1916 (39 Stat. 535), as amended or supplemented, (2) for lands within a national recreation area, (3) for lands in a fish hatchery administered by the Secretary, wildlife refuge, wildlife range, game range, wildlife management area, waterfowl production area, or for lands acquired or reserved for the protection and conservation of fish and wildlife that are threatened with extinction, (4) for tribally or individually owned Indian trust or restricted lands, within or without the boundaries of Indian reservations.

Lessees,
citizenship
requirement.

SEC. 16. Leases under this Act may be issued only to citizens of the United States, associations of such citizens, corporations organized under the laws of the United States or of any State or the District of Columbia, or governmental units, including, without limitation, municipalities.

SEC. 17. Administration of this Act shall be under the principles of multiple use of lands and resources, and geothermal leases shall, insofar as feasible, allow for coexistence of other leases of the same lands for deposits of minerals under the laws applicable to them, for the location and production of claims under the mining laws, and for other uses of the areas covered by them. Operations under such other leases or for such other uses, however, shall not unreasonably interfere with or endanger operations under any lease issued pursuant to this Act, nor shall operations under leases so issued unreasonably interfere with or endanger operations under any lease, license, claim, or permit issued pursuant to the provisions of any other Act.

Cooperative
or unit
plan.

SEC. 18. For the purpose of properly conserving the natural resources of any geothermal pool, field, or like area, or any part thereof, lessees thereof and their representatives may unite with each other, or jointly or separately with others, in collectively adopting and operating under a cooperative or unit plan of development or operation of such pool, field, or like area, or any part thereof, whenever this is determined and certified by the Secretary to be necessary or advisable in the public interest. The Secretary may in his discretion and with the consent of the holders of leases involved, establish, alter, change, revoke, and make such regulations with reference to such leases in connection with the institution and operation of any such cooperative or unit plan as he may deem necessary or proper to secure reasonable protection of the

public interest. He may include in geothermal leases a provision requiring the lessee to operate under such a reasonable cooperative or unit plan, and he may prescribe such a plan under which such lessee shall operate, which shall adequately protect the rights of all parties in interest, including the United States. Any such plan may, in the discretion of the Secretary, provide for vesting in the Secretary or any other person, committee, or Federal or State agency designated therein, authority to alter or modify from time to time the rate of prospecting and development and the quantity and rate of production under such plan. All leases operated under any such plan approved or prescribed by the Secretary shall be excepted in determining holdings or control for the purposes of section 7 of this Act.

When separate tracts cannot be independently developed and operated in conformity with an established well-spacing or development program, any lease, or a portion thereof, may be pooled with other lands, whether or not owned by the United States, under a communitization or drilling agreement providing for an apportionment of production or royalties among the separate tracts of land comprising the drilling or spacing unit when determined by the Secretary to be in the public interest, and operations or production pursuant to such an agreement shall be deemed to be operations or production as to each lease committed thereto.

The Secretary is hereby authorized, on such conditions as he may prescribe, to approve operating, drilling, or development contracts made by one or more lessees of geothermal leases, with one or more persons, associations, or corporations whenever, in his discretion, the conservation of natural products or the public convenience or necessity may require or the interests of the United States may be best served thereby. All leases operated under such approved operating, drilling, or development contracts, and interests thereunder, shall be excepted in determining holdings or control under section 7 of this Act.

SEC. 19. Upon request of the Secretary, other Federal departments and agencies shall furnish him with any relevant data then in their possession or knowledge concerning or having bearing upon fair and adequate charges to be made for geothermal steam produced or to be produced for conversion to electric power or other purposes. Data given to any department or agency as confidential under law shall not be furnished in any fashion which identifies or tends to identify the business entity whose activities are the subject of such data or the person or persons who furnished such information.

SEC. 20. All moneys received under this Act from public lands under the jurisdiction of the Secretary shall be disposed of in the same manner as moneys received from the sale of public lands. Moneys received under this Act from other lands shall be disposed of in the same manner as other receipts from such lands. Moneys.

SEC. 21. (a) Within one hundred and twenty days after the effective date of this Act, the Secretary shall cause to be published in the Federal Register a determination of all lands which were included within any known geothermal resources area on the effective date of the Act. He shall likewise publish in the Federal Register from time to time his determination of other known geothermal resources areas specifying in each case the date the lands were included in such area; and Publication in
Federal Register.

(b) Geothermal resources in lands the surface of which has passed from Federal ownership but in which the minerals have been reserved to the United States shall not be developed or produced except under geothermal leases made pursuant to this Act. If the Secretary of the Interior finds that such development is imminent, or that production from a well heretofore drilled on such lands is imminent, he shall so report to the Attorney General, and the Attorney General is authorized

and directed to institute an appropriate proceeding in the United States district court of the district in which such lands are located, to quiet the title of the United States in such resources, and if the court determines that the reservation of minerals to the United States in the lands involved included the geothermal resources, to enjoin their production otherwise than under the terms of this Act: *Provided*, That upon an authoritative judicial determination that Federal mineral reservation does not include geothermal steam and associated geothermal resources the duties of the Secretary of the Interior to report and of the Attorney General to institute proceedings, as hereinbefore set forth, shall cease.

SEC. 22. Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to its exemption from State water laws.

Waste,
prevention.

SEC. 23. (a) All leases under this Act shall be subject to the condition that the lessee will, in conducting his exploration, development, and producing operations, use all reasonable precautions to prevent waste of geothermal steam and associated geothermal resources developed in the lands leased.

(b) Rights to develop and utilize geothermal steam and associated geothermal resources underlying lands owned by the United States may be acquired solely in accordance with the provisions of this Act.

Rules and
regulations.

SEC. 24. The Secretary shall prescribe such rules and regulations as he may deem appropriate to carry out the provisions of this Act. Such regulations may include, without limitation, provisions for (a) the prevention of waste, (b) development and conservation of geothermal and other natural resources, (c) the protection of the public interest, (d) assignment, segregation, extension of terms, relinquishment of leases, development contracts, unitization, pooling, and drilling agreements, (e) compensatory royalty agreements, suspension of operations or production, and suspension or reduction of rentals or royalties, (f) the filing of surety bonds to assure compliance with the terms of the lease and to protect surface use and resources, (g) use of the surface by a lessee of the lands embraced in his lease, (h) the maintenance by the lessee of an active development program, and (i) protection of water quality and other environmental qualities.

SEC. 25. As to any land subject to geothermal leasing under section 3 of this Act, all laws which either (a) provide for the disposal of land by patent or other form of conveyance or by grant or by operation of law subject to a reservation of any mineral or (b) prevent or restrict the disposal of such land because of the mineral character of the land, shall hereafter be deemed to embrace geothermal steam and associated geothermal resources as a substance which either must be reserved or must prevent or restrict the disposal of such land, as the case may be. This section shall not be construed to affect grants, patents, or other forms of conveyances made prior to the date of enactment of this Act.

30 USC 530.

SEC. 26. The first two clauses in section 11 of the Act of August 13, 1954 (68 Stat. 708, 716), are amended to read as follows:

30 USC 181.

30 USC 281.

"As used in this Act, 'mineral leasing laws' shall mean the Act of February 25, 1920 (41 Stat. 437); the Act of April 17, 1926 (44 Stat. 301); the Act of February 7, 1927 (44 Stat. 1057); Geothermal Steam Act of 1970, and all Acts heretofore or hereafter enacted which are amendatory of or supplementary to any of the foregoing Acts; 'Leasing Act minerals' shall mean all minerals which, upon the effective date of this Act, are provided in the mineral leasing laws to be disposed of thereunder and all geothermal steam and associated geothermal resources which, upon the effective date of the Geothermal Steam Act of 1970, are provided in that Act to be disposed of thereunder;"

SEC. 27. The United States reserves the ownership of and the right to extract under such rules and regulations as the Secretary may prescribe oil, hydrocarbon gas, and helium from all geothermal steam and associated geothermal resources produced from lands leased under this Act in accordance with presently applicable laws: *Provided*, That whenever the right to extract oil, hydrocarbon gas, and helium from geothermal steam and associated geothermal resources produced from such lands is exercised pursuant to this section, it shall be exercised so as to cause no substantial interference with the production of geothermal steam and associated geothermal resources from such lands.

Certain mineral
rights, retention
by U. S.

Approved December 24, 1970.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 91-1544 (Comm. on Interior and Insular Affairs).
SENATE REPORT No. 91-1160 (Comm. on Interior and Insular Affairs).
CONGRESSIONAL RECORD, Vol. 116 (1970):

Sept. 16, Oct. 14, Dec. 4, 10, considered and passed Senate.
Oct. 5, Dec. 9, considered and passed House.

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